Kindergarten

WCSD Curriculum Guides

Elementary Mathematics

Washoe County School District

Every Child, By Name And Face, To Graduation℠

Version 4: 2022/2023

About this guide:

Curriculum is one component of a larger mathematics instructional program in Washoe County School District (WCSD) for Kindergarten through 5th grade students. The purpose of curriculum guides are to bridge the district's K-5 Philosophy of Mathematics Education with the Nevada Academic Content Standards (NVACS) through a connection of the Curriculum Pacing Frameworks, instructional materials (*Bridges in Mathematics* or ***enVision**math**2.0***), research based instructional practices and clarification of the standards when necessary. The following describes a course of study for the specified grade for one year. ***ALL*** students must receive quality instruction in ***ALL*** grade level standards in one instructional year.

This guide is designed to be **used with the instructional materials** during planning. *This guide is not meant to supplant any portion of the instructional materials*. Teachers will continue to read through Units/Topics during instructional planning.

Guide language:

Throughout the guide the following language is used to describe the level of understanding expected at the lesson level. This language is found in the lesson-by-lesson section in the column labeled "Big Idea Mathematical Development".

Beginning: Indicates students initial explorations with the mathematical idea(s) explored in the lesson. ***Instruction continues*** *to the next lesson*.

Developing: Students have worked with the mathematical ideas in previous grades or previously during the year. The focus of the lesson is to connect and build student understanding. Teachers provide intensified support to students who may exhibit misconceptions, partial understanding, no or limited understanding. ***Instruction continues*** *to the next lesson*.

Secure: Indicates that students have worked previously with these ideas and are expected to be at a level of secure understanding. Students with secure understanding are able to make connections and use the mathematics in a variety of situations; yet may still struggle expanding the understanding to non-routine situations. Students who are secure may still make mistakes at times; yet these students demonstrate that they have mathematical understanding with limited if any misconceptions. Students not secure in the understanding by the end of that Unit/Topic might benefit from small group intensification on these ideas. Teachers may choose to use an **F/D/E** (**F**ormative process, **D**ifferentiation or **E**nrichment) day to provide additional instructional opportunity; yet should be cautious to not spend too long exploring these ideas to ensure students have ample opportunity for instruction to ALL of the Nevada Academic Content Standards (NVACS) for mathematics.

This lesson indicates a level of secure understanding.

NVACS (Content and Practices)	Big Idea Mathematical Development	Instructional Clarifications & Considerations
Lesson 2-1: Even and Odd Numbers		
2.OA.C.3 2.OA.B.2 **MP.4** MP.5 MP.6	**Access Prior Learning:** In first grade, students had the opportunity to work with the classification of even and odd numbers. **Securing the Big Idea:** In this lesson, students are securing understanding that numbers can be classified as even or odd by showing numbers as two equal parts.	Students continue to build fluency with addition and subtraction facts within 20 as they construct the big idea of equivalence and the understanding that even numbers can be represented with doubles facts. **Topic Opener:** Consider limiting the *Topic Opener* to discussion of the *Topic Essential Question* (TE p.77), *Review What You Know* (TE p. 78-80) and the *Topic 2 Vocabulary Words Activity* with the words *even* and *odd*. Introduce remaining vocabulary words as they appear in the lessons. Post the question and student strategies on your math focus wall. **Visual Learning:** Have students make cube towers to increase understanding and engagement. Although the *Visual Learning* discusses the pattern in the ones digits for even and odd numbers, **focus the conversation on defining even numbers as numbers that can be broken into two equal**

Curriculum Development Teams:
2017/2018: Dawna Ogden (Lead), Stephanie Vega, Susan Skinner, Krista Heard
2018/2019: Kristine Foster, Krista Heard, Julie Horn, Michelle Lynch, Dawna Ogden, Susan Skinner, JoAnn Spidahl, Stephanie Vega
2019/2020: Kacey Edgington, Dawna Ogden, Christin O'Keefe, Denise Trakas
2021/2022: Susan Skinner (Lead)
2021/2022: Shayla Taylor
Please reference Essential Outcomes during planning.
Note:
Please e-mail Denise Trakas (dtrakas@washoeschools.net) with any questions, concerns or potential correction suggestions.

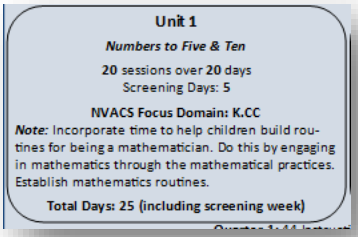
Kindergarten Unit 1: Numbers to Five & Ten

Big Conceptual Idea: K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking (pp. 1-11)

Read the Introducing Bridges in Mathematics section located in the beginning of the Unit 1 binder prior to unit instruction*. This section provides an overview of the purposes and structure of the Bridges materials and includes Kindergarten-specific characteristics of the Mathematical Practices.*

Read the Bridges Unit Overview/Introduction for each Unit, the Module Overview for the week's sessions, and the Session Summary *along with details for the teaching of each session. These Introduction/Overview/Summary sections provide focus, clarity, vocabulary, definitions, and examples that support the critical "big mathematical ideas and understandings". This information supports professional decision-making within the Modules and Sessions as needed.*

Mathematical Background: Read Bridges *Unit 1 Overview* and *Introduction* (pp. i-vi)	**Essential Question for teacher consideration:** How do I set up routines to support student engagement within mathematics content and beginning understandings of the counting sequence and quantity?



Kindergarten Curriculum Pacing Framework: Balanced Calendar

Instructional Note:

> *"If you learn something deeply, the synaptic activity will create lasting connections in your brain, forming structural pathways, but if you visit an idea only once or in a superficial way, the synaptic connections can "wash away" like pathways made in the sand." (Boaler, 2016, p. 1)*

This Curriculum Guide supports a student-centered, problem solving, teacher-responsive model of teaching mathematics in which students are actively engaging in meaningful, authentic encounters, doing much of the real thinking, working, and talking within the mathematics content. From the very first day of kindergarten, students are encouraged to engage in meaningful, intentional, playful mathematics interactions that build mathematics understanding!

Research supports the use of fingers to create perception and representation of numbers as it develops a specific region of our brain, the somatosensory finger area. "It is important to remove the stigma from counting on fingers and to see this activity as inherently important and valuable." (Boaler, n.d.)

Encourage continued finger use to develop this finger perception and develop a culture where this is viewed as a positive strategy for problem solving. "6 year old's finger representation was a better predictor of future mathematics success than their scores on tests of cognitive processing" (Boaler, n.d.). https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/Visual-Math-Paper-vF.pdf. The *Bridges Educator Site* also provides information on this research.

K.CC.1 (counting by 1s to 20) is the focus standard developed throughout this *Unit* with introduction and exposure to number quantity within 5 and to 10. This *Unit* also introduces patterns; although the word "patterns" is not mentioned in the NVACS for K.CC, K.OA, K.NBT, K.MD, or K.G, patterns are weaved throughout all mathematics and are an integral part of understanding mathematics. In addition, all of the Mathematical Practices can be applied to patterns, especially MP 7 (Look for and make use of structure.) and MP 8 (Look for and express regularity in repeated reasoning.).

Establishing classroom management and routines:
Throughout *Unit 1* and during *Number Corner Workouts* (*Problems & Investigations, Work Places, Calendar Grid, Calendar Collector, Computational Fluency, Days in School,* and *Number Line*)**:**

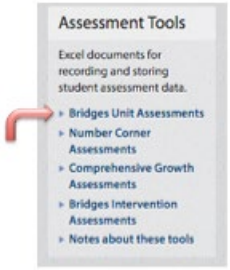
- Establish **routines and patterns of student engagement** for active learning using the materials and the mathematics in Bridges *Units*. These routines and behaviors become the critical structures for your classroom management and student interactions.
- **Teach routines to independence.** Carefully monitor during free exploration times for materials care, use, and routines. Establish the behaviors you need and want from the beginning. Stop and reteach if necessary!
- Engage students continually in the ***Mathematical Practices*** *(NVACS, 2010, pp. 6-8)* - persevering in making sense, thinking relationally and mathematically, explaining and justifying, applying what they know to other meaningful situations, using tools appropriately and efficiently, working and communicating precisely, using patterns, and working efficiently. *Bridges Math Practice Posters* are available to print.
- Engage in **authentic conversations and problem solving** around the content of the *Sessions* and *Workouts*.
- Use **manipulatives, models, and representations** to help make the mathematics visual, engaging and fun for students.
- Support students' development of **strategic behaviors/strategies** for problem solving. What are students thinking in their own heads and doing to "work" at solving the problem? What behaviors do they show independently at a point of error or confusion?

- Watch for development of strategic behaviors within the mathematics content by **child watching** and using the formative and formal Bridges ***Assessments*.**
- Expect **all students** to engage in problem solving and in explaining and justifying their thinking.
- Engage students in thinking about and understanding the **big ideas of the mathematics content** expected in kindergarten.
- "Rigor" using the Bridges instructional materials is dependent upon **how the teacher engages students** in the activities and conversations of the *Sessions*. The depth and focus of the interactions, aligned with an understanding of individual students' needs, provides for immediate intensification of teaching to drive the development of each student.
- Math instruction is required a minimum of **73 minutes every day** (WCSD, Instructional Minutes). Bridges recommends 80 minutes of math instruction for Bridges *Unit* and *Number Corner* interactions.
- Limit whole group *Problems & Investigations* instruction to 15-20 minutes a day during the first 4-6 weeks to allow 25-30 minutes for student *Work Place* exploration and use of the manipulatives to build stamina for your desired classroom behaviors and routines. Allow 20-25 minutes for *Number Corner* activities.
- See *Teaching Tips* in the *Introduction* section of *Unit 1*, p. iv, for management ideas.

On-going enrichment:
Take note of the ***Skills Across the Grade Level*** chart in the *Introduction* section for each *Unit*. This chart shows the extent and expectation of the development of Standards within the *Unit* (see *Unit 1*, p. v) and within other *Units* and *Number Corner Workouts* across the year. This information supports your professional decision-making regarding instruction, intensification and intervention.

Consider use of ***A Year's Worth of Assessments*** chart (*Assessment Guide* [binder], Assessment Overview tab, pp.6-7) and the ***Kindergarten Assessment Map*** (*Assessment Guide*, Assessment Overview tab, pp. 12-14) for assessment types and location throughout the year in Bridges *Units* and *Number Corner*. These assessments inform instruction and intensification needs, and they can be recorded and monitored on the *Class Checklists/Scoring Guides* provided in the:

- *Assessment Guide* (under the appropriate assessment tab)
- *Teachers Guide* (*Unit* binder, under the Teacher Masters tab)
- *Number Corner Teachers Guide* (Volume binder, under the month)
- Or, on the electronic spreadsheets available on the Bridges Educator Site (Implementation tab, Assessment Tools box on the right sidebar of the page, *Bridges Unit Assessments* or *Number Corner Assessments*).



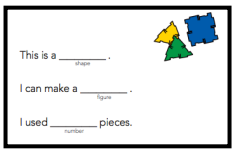
In addition, consider use of the WCSD Math Kidwatching Spreadsheets to collect high leverage data (aligned to WCSD Progress Reports) during each quarter of instruction. To access these within Microsoft Teams, go to the Kindergarten Teacher Community. Click on Kinder Files within the General Channel; then scroll down to the folder labeled Progress Report.

Consider using Catherine Fosnot's **Landscape of Learning: Number Sense, Addition and Subtraction** to identify where students are on the landscape of big mathematical ideas, strategies and use of models. Provide interactions for intensification and acceleration to move students up the landscape.

Essential Academic Vocabulary Use these words consistently during instruction.	
New Academic Vocabulary: (first time explicitly taught) *indicates *Word Resource Cards* are available in the Bridges materials	**Review Academic Vocabulary:** Vocabulary from PreK Standards (for those students who attended in Washoe County) or explicitly taught in *Number Corner*
one*, two, three, four, five six, seven, eight, nine, ten attribute* circle* triangle* greatest most* number* less than* greater than* pattern*	For some Children: (NV pre-K standards) counting sequence (1-10) naming *triangle*, *circle* and/or *squares* *"more than"* support to connect to language of *"greater than"*

Additional terminology that students may need support with: sort, create, graph, five-frame, ten-frame, numeral, extend, repeating pattern, same/different.

Standards listed in **bold** indicate a focus of the lesson.

NVACS (Content and Practices)	Mathematical Development of the Big Idea	Instructional Clarifications & Considerations
Module 1- Session 1: One Shoe		
K.CC.1 K.CC.4a K.CC.4b **K.MD.3** **MP.1** **MP.3** MP.5 MP.6	**Access Prior Learning and Connections to Future Learning:** • What do I notice about shoes? What is the same? What is different? • When given a collection of objects, consider how students organize and separate the objects into various categories. This builds a foundation to data collection and graphical representations that reappear throughout the year. **Beginning with the Big Idea and key Strategic Behaviors:** • **counting** (number word sequence in correct order) • **using 1-to-1 correspondence** (counts each object once and only once) • **understanding cardinality** (the last number they say indicates "how many" in the whole collection) • **noticing, identifying, and comparing** (familiar attributes)	**Guiding Questions:** • How can we share our thinking with each other? • How can we sort objects? What are different ways we can sort shoes? • What is an attribute? • How can I work with others using math tools? **Instructional Notes:** • Visual model is shoes. • On the *Bridges Educator Site* under the Implementation tab, sort for "shoes" for helpful ideas for this lesson. • Helpful side notes for the vocabulary that drives the math content understanding are included for each *Session* (e.g. p. 3). • Consider scheduling Day 5 as a "spirit day" by wearing crazy shoes to school in order to have a variety of shoes to observe. • Rather than having students sit in a circle, suggest that students sit in an oval. A circle must have all points (students) equidistant from the center. This would require measurement such as pieces of string from the center. For ease, suggest an oval, a rounded, slightly elongated shape that is large enough for everyone, and students can face into the middle. • Consider utilizing the *Work Place Sentence Frames* found on the *Educator website* to support students' communication.  **Literature Connection:** • *Pete the Cat: I Love My White Shoes* by Eric Litwin **Writing and Enrichment:** • Promote math communication and representation by having children draw and label attributes of shoes (Velcro, laces, color, material, size, etc.) in a math journal or on paper. • See *Teacher Masters* (p. T4, T6, T8) of the *Work Place Guides* for *Differentiation* ideas. **Child Watching and Assessment:** • See the *Skills and Concepts* sections and the *Assessment and Differentiation* sections (e.g. p. T4) if you need support for formative assessment observations during *Work Places.* • See Assessment Binder, Bridges Unit Assessments tab (p. 1-10) for Assessment supports throughout Unit 1 including Observational Assessments ideas, Checkpoints, Skills and Concepts Assessed, Support and Intervention help, Additional Resources, *Work Place Differentiation* Chart, Checkpoint Scoring Sheets and Scoring Guides, and Reteaching Suggestions.
Module 1- Session 2: Two Shoes		
K.CC.1 K.CC.4a K.CC.4b **K.CC.6** K.MD.3 K.G.1 **MP.1** MP.5 **MP.6**	**Access Prior Learning and Connections to Future Learning**: • What are some ways to sort shoes? How do we know which objects "go together?" • Greater than, less than, or equal to are comparisons that are revisited in units 2-8 and a focus in *Number Corner* Dec- May. **Beginning with the Big Idea and key Strategic Behaviors:** • **noticing and identifying properties (**by comparing and sorting by same and different attributes) • **recognizing magnitude** with "more" and "less" • **using 1-to-1 correspondence** • understanding cardinality • **subitizing** (instant recognition of quantity without counting)	**Guiding Questions**: • How can we know if things are the same or different? How do we know how many? How many more? How many less? • Is there more than one way to sort an object? • What are some ways you can sort shoes? How are shoes alike and different? • What is an attribute? • How can I record my information? **Instructional Note:** • Visual model is shoes; encourages the development of subitizing. **Writing and Enrichment:** • Have children draw and label one way to sort attributes of shoes (e.g. laces vs. no laces). • See *Teacher Masters* (p. T10) of the *Work Place Guides for Differentiation* ideas.

Module 1- Session 3: Five Shoes

K.CC.1 K.CC.4a K.CC.4b K.CC.5 **K.CC.6** K.CC.7 **K.MD.3** **MP.1** **MP.6** MP.7	**Access Prior Learning and Connections to Future Learning**: • Connect to "more" and "less" from yesterday. • Classifying objects into categories is a focus in Units 4, 5, & 7 and *Number Corner* Oct., Dec., Mar.-May. **Beginning with the Big Idea and key Strategic Behaviors:** • **noticing and identifying properties** (by comparing and sorting by familiar attributes) • **recognizing magnitude** • **classifying and counting** (using physical graphing to compare "greatest") • **using 1-to-1 correspondence** • **understanding cardinality**	**Guiding Questions** • How can we organize information? • What categories can I create using attributes? How can I record what I counted? • What is the different between more or less? • How do we know if a category has more or less than another? • How can we compare and figure out which group has the most/greatest? **Instructional Notes:** • Visual model is shoes. • Note ways the *Bridges P&I* encourages multiple student responses, explanations of problem-solving, and risk taking (p.16-17 – T/S discussion ideas). • For *Work Place 1E, Pennies and Mats* – consider changing pennies to different manipulatives such as beans, buttons, cubes, plastic insects (or other science connections), etc. as student interest wanes. **Writing and Enrichment:** • See *Teacher Masters* (p. T12) of the *Work Place Guides for Differentiation* ideas. • Note the CHALLENGE ideas (e.g. pp.18 and 19) provided in *Problems & Investigations* and *Work Places.*

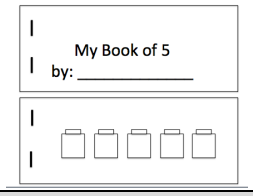
Module 1- Session 4: Ten Shoes

K.CC.1 K.CC.4a K.CC.4b K.CC.5 **K.CC.6** K.CC.7 **K.MD.3** **MP.1** **MP.6** MP.7	**Access Prior Learning and Connections to Future Learning:** • Connect to "greatest" and "most" conversations from yesterday. **Beginning with the Big Idea and key Strategic Behaviors:** • **noticing and identifying properties** (by comparing and sorting by familiar attributes) • **recognizing magnitude** • **classifying and counting** (using physical graphing to compare "greatest"/"most") • **using one-to-one correspondence** • **understanding cardinality**	**Guiding Questions** • How can we compare and figure out which group has the most now? • What ways can I sort shoes? What can I observe about this set of 10 shoes? • How can I arrange these shoes by attributes? • How can we organize the groups to make comparisons? • How can I decide which collection has the most? **Instructional Notes:** • Visual model is shoes. • *Work Place Menu Cards* are introduced (see pp. 25-26) for choice and independence which support the development of self-regulation; to support students who are still learning to count to 6, provide a large number line (on sentence strip, or tag board) with numbers 1-6 so they can cover a number to join a *Work Place* until they are able to count. 1 2 3 4 5 6 **Literature Connection:** • *Pete the Cat: Rocking in my School Shoes* by Eric Litwin. **Writing and Enrichment:** • Use the *Work Places Differentiation Chart* in *Assessment Binder* (Bridges Unit Assessments pp. 4-5) to make notes on which students need support or challenge.

Module 1- Session 5: All Shoes

K.CC.1 K.CC.4a K.CC.4b K.CC.4c K.CC.5 **K.CC.6** K.CC.7 **K.MD.3** **MP.1** **MP.2** MP.7	**Access Prior Learning and Connections to Future Learning:** • Connect to "more", "less", "greatest", and "most" from previous days. • Labeling each group with a numeral helps students recognize that a number represents a quantity. This is the first step toward reasoning abstractly and quantitatively. • Writing and reading numbers from 0-10 is revisited in *Units 2-4* and *Number Corner* Sept. –Dec.	**Guiding Questions** • What other ways can we sort? • How do we know how many? • How can I record what I counted? • Why do we count? (to keep track, describe amounts, fairness, have enough) **Instructional Notes:** • Visual model is children. • In understandings of **magnitude**, **classifying, and counting** we are comparing today to "how many more?" This may be a complex understanding for some students. We will revisit this through many different interactions throughout the year. **Writing and Enrichment:** • Note the CHALLENGE idea (p. 29) provided in *Problems & Investigations.* **Child Watching and Assessment:** Opportunity for informal assessment of counting strategies during Pennies and Mats *Work Place* (see pp.30-31); can be documented on the *Unit 1 Work Place Differentiation Chart* (Assessment Binder, Bridges Unit Assessments tab, pp.4-5). ***-continues on next page-***

	Beginning with the Big Idea and key Strategic Behaviors: • **noticing and identifying properties** (by comparing and sorting by familiar attributes) • **recognizing magnitude** • **classifying and counting** (using physical graphing to compare "how many more?") • **using one-to-one correspondence** • **understanding cardinality**	
Module 2- Session 1: Shoes to Toes		
K.CC.4a K.CC.4b **K.CC.5** K.OA.3 MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning**: • Count to 20 by 1s is revisited in *Units 2-4* and *Number Corner* Sept. & Oct. • This is the introduction of the five-frame. The five-frame continues as a visual model throughout the unit. Five-frames help students look for and make use of structure. **Beginning with the Big Idea and key Strategic Behaviors:** • using 1-to-1 correspondence • understanding cardinality • subitizing **Developing:** • counting	**Guiding Questions** • How many dots and empty boxes do we see? • How can we make that many in different ways? What do you notice? What do you see? • How can I use different math tools to represent what I see? **Instructional Notes:** • Visual models are the five-frame, cubes, and fingers. • Use of the five-frame structure, fingers, and manipulatives, support mathematical development of counting, one-to-one correspondence, cardinality, and subitizing. • This engagement also supports the beginning development of the big mathematical ideas of **hierarchical inclusion** (numbers are nested within each other), **organizing and keeping track** within 5, and **part-part-whole relations** with combinations to 5. **Literature Connections:** • *Ten Black Dots* by Donald Crews • 5 Black Dots Class Book (Each student creates a page: ___ black dots are a _____.) **Writing and Enrichment:** • Note the CHALLENG*E* idea (M2 S1 p. 4) provided in *Problems & Investigations*
Module 2- Session 2: Fabulous Fives		
K.CC.4a K.CC.4b **K.CC.5** K.OA.3 MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning**: • Make connections between dots, fingers, and cubes all showing quantity. What do you remember about this tool from yesterday? • Introduction to subitizing and is revisited in *Units 2, 6, & 7* and *Number Corner* all months except Dec. **Beginning with the Big Idea and key Strategic Behaviors:** • using 1-to-1 correspondence • understanding cardinality • subitizing **Developing:** • counting	**Guiding Questions** • How many do we see? How can we make that many? • How can I build the quantity on my five frame? • What information do I need to figure out how many? (how many boxes are filled, how many are empty, how many to make 5). **Instructional Notes:** • Visual models are the five-frame, cubes, and fingers. • Students are introduced to "flashing" with the five-frame cards to support the development of **subitizing.** **Literature Connection:** • *Five Little Monkeys* series by Eileen Christelow **Writing and Enrichment:** • Note the SUPPORT ideas *(M2 S2 p.* 8) provided in *Problems & Investigations* for students who need additional support with **one-to-one correspondence** and **subitizing.** • The first *Home Connection* page is available (check note for modeling expectations for this new routine on M2 S2 p. 9). The *Home Connections* provide additional opportunities for many students to engage in the learning of the classroom one more time and in one more format. This is critical reinforcement of learning for some students.
Module 2- Session 3: Fives with Fingers		
K.CC.4a K.CC.4b **K.CC.5** K.OA.3 MP.1	**Access Prior Learning and Connections to Future Learning**: • Make connections between the dots, fingers, and cubes all showing quantity.	**Guiding Questions** • How many do we see? How else can we show that many? • How can my fingers be used a math tool? How can I use my fingers to show the number of dots? • How can I figure out how many there are in all? ***-continues on next page-***

MP.6 **MP.7**	**Beginning with the Big Idea and key Strategic Behaviors:** • using 1-to-1 correspondence • understanding cardinality • subitizing **Developing:** • counting	**Instructional Notes:** • Visual models are the five-frame and fingers. • Students show quantities on their fingers. See the side note on M2 S3 p. 12 on **Finger Patterns** for support on developmental differences with this ability. **Literature Connection:** • *Five Green and Speckled Frogs* by Constanza Basaluzzo **Writing and Enrichment:** • Note the SUPPORT ideas (M2 S3 p. 13) provided in *Problems & Investigations*. Some students may need extra support in using their finger to model.
Module 2- Session 4: Numerals 1 to 5		
K.CC.3 **K.CC.4a** K.CC.4b K.CC.5 K.OA.3 K.MD.3 MP.1 **MP.6** MP.7	**Access Prior Learning and Connections to Future Learning**: • What do they know about numeral writing? • Writing and reading numbers from 0-10 is revisited in *Units 2-4* and *Number Corner* Sept.–Dec. • Combinations to 5 is revisited in all *Units* and *Number Corner* months. **Beginning with the Big Idea and key Strategic Behaviors:** • matching number names to **written numerals** **Developing:** • counting	**Guiding Questions** • How do we write numbers? Why do we use numerals? • Why do we need to be able to count objects? **Instructional Notes:** • Auditory and Visual models are the rhymes and posters visuals of the rhymes. Posters are found in the *Number Corner* binder and could be laminated and placed on a ring for easy access. • The first structured *Work Place* is introduced. Introduce the *Work Places* as "games" so students engage in them as "play" within the classroom routines and expectations you are establishing. • Consider using the online digital display tool found on the Bridges web site (note the second page), in addition to teacher/student modeling. • Optional *Work Place Folders* are also explained here (*M2 S4*, p. 16). • Additional Work Place could be writing numbers in sand or salt, or with paint bushes. **Literature Connections:** • *The Hungry Caterpillar* by Eric Carle and *Rooster's Off to See the World* by Eric Carle (Numerals/quantities are used to keep track and describe important events in the story.) **Writing and Enrichment:** • See *Game Variations A & B* on the *Work Place Guide* (p. T2). • Create My Book of 5:  Students record the ways they made 5 in the game Beat You to 5. This task supports beginning concepts of counting all. It also helps students develop part-part whole thinking by having them count how many of each color. Students explore all the ways that five can be made. It is important for the crayons/markers to match the colors on the cubes.
Module 2- Session 5: Filling Five-Frames		
K.CC.3 **K.CC.4a** **K.CC.4b** **K.CC.5** K.OA.3 K.MD.3 MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning**: • Review various math tools that have been introduced (cubes, five frames, fingers, beans, etc.) and what makes them "useful." **Beginning with the Big Idea and key Strategic Behaviors:** • using 1-to-1 correspondence • understanding cardinality • subitizing **Developing:** • counting	**Guiding Questions** • How many do we see? How can we make that many? • How can my fingers be used a math tool? • How can I use my fingers to show the number of dots? • How can I figure out how many there are in all? • How can you know an amount without counting each object? **Instructional Note:** • Visual models are five-frames and fingers. **Writing and Enrichment:** • See *Teacher Masters* (M2 S5 p.T1) of the *Work Place Guides for Differentiation* ideas. • Reteaching suggestions aligned with the CHECKPOINT ASSESSMENT can be found in the Assessment binder, Bridges Unit Assessment *tab*, p.8. • A second *Home Connection* page is provided (*M2 S5*, p. 24 and *Home Connections* tab, p.4). **Child Watching and Assessment:** • **Elements of Early Number Sense CHECKPOINT** in small groups of about 4 students while other students engage in *Work Places* (see notes under Child Watching and Assessment below). From your observations of your students over the last couple of weeks for early one-to-one correspondence, cardinality, subitizing, and combinations of 5, consider who you might need this complete assessment information for to support your instructional decisions. • The **Checkpoint Assessment** is located in *M2 S5*, p.23 and T6. Also see scoring and reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab pp. 7-8

Module 3- Session 1: Terrific Tens		
K.CC.4a **K.CC.4b** K.CC.4c K.CC.5 K.OA.4 MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning**: • How is the ten-frame like the five-frame? What do ten-frames and five-frames have in common? • Introduction of ten-frame as a tool to build fluency with combinations to 10. Combinations to 5 is revisited in all *Units* and *Number Corner* months. **Beginning with the Big Idea and key Strategic Behaviors:** • understanding cardinality **Developing:** • counting (to 10) • subitizing (to 2 or 3) • using 1-to-1 correspondence (to 5)	**Guiding Questions** • Why do you think this tool called a ten-frame? • How many do we see? How do you know? How do you know that you counted correctly? • How can we make that many? **Instructional Notes:** • Visual models are ten-frames and fingers. • Consider using this order when presenting the out-of-order ten-frame cards in the session (*M3 S1*, p.5 #7) to support the new learning from the known: 2, 3, 5, 7, 1, 8, 4, 10, 6, 9. • This engagement also supports the beginning development of the big mathematical ideas of **hierarchical inclusion** (numbers are nested within each other), **organizing and keeping track** within 5, and **part-part-whole relations** with combinations to 5 and within 10. **Literature Connection:** • *Ten Black Dots* by Donald Crews **Writing and Enrichment:** • Note the SUPPORT and CHALLENGE ideas (M3 S1 pp. 4-5) provided in *Problems & Investigations.*
Module 3- Session 2: How Many Dots? Part 1		
K.CC.3 K.CC.4a **K.CC.4b** **K.CC.4c** K.CC.5 MP.1 **MP.6** MP.7	**Access Prior Learning and Connections to Future Learning**: • What do they know already orally, visually, or quantitatively with 1-10? How do we use counting in our daily lives? What numbers do you use every day? **Beginning with the Big Idea and key Strategic Behaviors:** • using 1-to-1 correspondence • understanding cardinality • matching number names and quantities to written numerals **Developing:** • counting	**Guiding Questions** • How many do we see? • How can we put them in order? • Does the order I say the numbers matter when counting things (e.g. 1, 2, 3, 4 or 3, 2, 1, 5)? • What is a numeral? Why would I need to be able to read numerals? • Can we match them to the written numeral that is the same? **Instructional Notes:** • Visual models are ten-frames, cubes, number cards and ten-frame dot cards. • **Resist the temptation for you to put the students in the correct order if they are struggling with the task at first.** **Writing and Enrichment:** • Questions to consider - "Is there an easier or a faster way you could count that?" or "Do you see something you know that could help you or make your work easier?"
Module 3- Session 3: How Many Dots? Part 2		
K.CC.3 K.CC.4a **K.CC.4b** **K.CC.4c** K.CC.5 K.CC.6 MP.1 **MP.6** MP.7	**Access Prior Learning and Connections to Future Learning**: • How do we use counting in our daily lives? What numbers do you use every day? **Beginning with the Big Idea and key Strategic Behaviors:** • understanding cardinality • **matching number names and quantities to written numerals** **Developing:** • counting (to 10) • using 1-to-1 correspondence (to 5)	**Guiding Questions** • Why are numbers important? How can we show numbers in different ways? • How many do we see? How can we put them in order? • Can we match them to the same written numeral? How else can we make that many? • What stories do numbers tell? **Instructional Note:** • Visual models are ten-frames, cubes, number cards and ten-frame dot cards. **Writing and Enrichment:** • *Home Connection* opportunity on p. 13 and under the *Home Connection* tab.

Module 3- Session 4: Beat You to Five		
K.CC.4a **K.CC.4b** K.CC.4c K.CC.5 K.CC.6 **K.OA.4** MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning**: • What games do you play at home? What do you already know about 5? • Combinations to 5 are revisited in all *Units* and *Number Corner* months. **Beginning with the Big Idea and key Strategic Behaviors:** • recognizing cardinality (to 5) • understanding part/whole relationships (to 5) **Developing:** • counting (to 10) • using 1-to-1 correspondence (to 5) • subitizing (to 2 or 3)	**Guiding Questions** • Which is the best spot for your spinner to land? • How do I determine how many more cubes I need to win? • Is there more than one way to get 5 (win)? **Instructional Notes:** • Visual models are five-trains and cubes. • The use of 2 different colors of cubes for each spin is critical for students to **see** how the parts are building to 5. • This game also supports the beginning development of the big mathematical ideas of **hierarchical inclusion** (numbers are nested within each other) and **part-part-whole relations** with combinations to 5, and the *Mathematical Practice* of precision, K.MP.6 (see side comment on p. 17). • Consider using the online digital display tool found on the Bridges web site (note the second page), in addition to teacher/student modeling.
Module 3- Session 5: Introducing Work Place 1G Beat You to Five		
K.CC.4a **K.CC.4b** K.CC.4c K.CC.5 K.CC.6 **K.OA.4** MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning**: • What did you learn about playing this game yesterday? **Beginning with the Big Idea and key Strategic Behaviors:** • recognizing cardinality (to 5) • understanding part/whole relationships (to 5) **Developing:** • counting (to 10) • using 1-to-1 correspondence (to 5) • subitizing (to 2 or 3)	**Guiding Questions** • What does 0 mean? • What happens if your spin is greater than the number of empty boxes? • How many ways can you make five? **Instructional Note:** • Visual models are five trains and cubes. **Writing and Enrichment:** • Note the Assessment & Differentiation suggestions for both mathematics and language on the *Work Place Guides* in the *Teacher Masters* sections p. T1. • See *Work Place Instructions* (p. T2) for game variations. **Child Watching and Assessment:** • **Beat You to Five CHECKPOINT** – formative assessment during *Work Places* for counting, one-to-one correspondence, cardinality, more/less, and decomposing 5. • Checkpoint is found on p. 21 and T3. Also see reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab pp. 44-45.
Module 3- Session 6: Introducing Work Place 1H Which Numeral Will Win?		
K.CC.3 K.MD.3 MP.1 **MP.6** MP.7	**Access Prior Learning and Connections to Future Learning**: • What do they already know about numeral writing? **Beginning with the Big Idea and key Strategic Behaviors:** • recognizing cardinality **Developing:** • counting (to 10) • using 1-to-1 correspondence (to 5) • subitizing (to 2 or 3)	**Guiding Questions** • Which numeral do you think will win? Why? **Instructional Note:** • Consider using the online digital display tool found on the Bridges web site in addition to teacher/student modeling (p. 2). **Writing and Enrichment:** • Note the Assessment & Differentiation suggestions for both mathematics and language on the *Work Place Guides* in the *Teacher Masters* sections p. T4. • The *Home Connection* is found on p. 25 and the M3 *Home Connection* tab.
Module 4- Session 1: Folktale Patterns		
K.OA. MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning**: • What is a pattern? • Patterning supports operations and algebraic thinking. Patterns are introduced here and explored	**Guiding Questions** • How do we describe and identify patterns? What is a pattern? **Instructional Note:** • Auditory and visual models are motions and sounds. ***-continues on next page-***

	throughout all months of *Number Corner*. **Beginning with the Big Idea and key Strategic Behaviors:** • creating and copying simple repetitive patterns with up to 3 elements	**Writing and Enrichment:** • GoNoodle has an interactive patterning activity called "Banana, Banana, Meatball" *(requires registration).*
Module 4- Session 2: Clap, Tap & Snap Patterns		
K.OA. MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning**: • Connect to sound/motion patterns from yesterday. **Beginning with the Big Idea and key Strategic Behaviors:** • creating, describing and copying simple repetitive patterns with up to 3 elements	**Guiding Questions** • How do you know when something is a pattern? • How do you know when something is not a pattern? • How can we use my hands and feet to make a pattern? **Instructional Notes:** • Visual models are sounds and motions with body parts. • Note, *Bridges* often will explore physically before moving to manipulatives, and explicitly make connections to previous work to support students' "relational understanding" (Van de Walle, Karp, Lovin, & Bay-Williams, 2014, p. 5). **Writing and Enrichment:** • The *Home Connection* is found on p. 9 and the *M4 Home Connection* tab.
Module 4- Session 3: Unifix Cube Patterns, Day 1		
K.OA. MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning**: • Connect to motion patterns from yesterday. • Identifying, describing and extending patterns allows opportunities to look for and make use of structure. This introduction creates the habit of seeking out patterns and structures when exploring mathematical ideas and situations. **Beginning with the Big Idea and key Strategic Behaviors:** • creating, describing and copying simple repetitive patterns with up to 3 elements	**Guiding Questions** • What patterns do you notice in other places around the classroom? School? Clothing? Art? • How else can we make a pattern we already see? **Instructional Notes:** • Visual models are cubes. • Explicitly make connections to the pattern work yesterday. • Pattern is by gender (boys, girls). Separating by gender may have negative impacts to students' identities, especially those who are gender fluid. Consider creating a repeating pattern by other attributes such as shirt color.
Module 4- Session 4: Unifix Cube Patterns, Day 2		
K.OA. MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning**: • Connect to cube patterns from yesterday. **Beginning with the Big Idea and key Strategic Behaviors:** • extending, and creating simple repetitive patterns with up to 3 elements	**Guiding Questions** • Besides color patterns, what kinds of patterns are there? (spatial, object, letters, numerals, words, sounds, etc.)? • How can I show the same pattern in two ways (translate pattern from one medium to another)? • How can we extend a pattern we already see? **Instructional Note:** • Visual models are cubes. **Writing and Enrichment:** • Consider having students create their own pattern strips with construction paper squares glued to strips of paper; accurate pattern strips could be added to Work Place 1l - Unifix Cube Patterns. • Note the SUPPORT and CHALLENGE suggestions on p. 15. • Note the Assessment and Differentiation ideas on the *Work Place Guides* under the *Teacher Masters* tab p.T1. • The *Home Connection* is found on p. 9 and the *M4 Home Connection* tab.

References

Battista, M. T. (2012). *Cognition-based assessment & teaching of addition and subtraction: Building on students' reasoning.* Portsmouth, NH: Heinemann.

Boaler, J. (2016). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages, and innovative teaching.* San Francisco, CA: Jossey-Bass & Pfeiffer Imprints.

Boaler, J. (n.d.). *Seeing as understanding: The importance of visual mathematics for our brain and learning.* Retrieved March 13, 2019, from https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/Visual-Math-Paper-vF.pdf

Carpenter, T., Fennema, E., Loef Franke, M., Levi, L., Empson, S.B. (2015). *Children's mathematics: Cognitively guided instruction* (2nd ed.). Portsmouth, NH: Heinemann.

Chapin, S. H., & Johnson, A. (2006). *Math matters: Understanding the math you teach, Grades K-8.* Sausalito, CA: Math Solutions Publications.

Council of Chief State School Officers. (2010). The Nevada Academic Content Standards. Retrieved from http://www.doe.nv.gov/uploadedFiles/nde.doe.nv.gov/content/Standards_Instructional_Support/Nevada_Academic_Standards/Math_Documents/mathstandards.pdf.

Common Core Standards Writing Team. (2011, May 29). *Progressions for the Common Core State Standards in Mathematics (draft). K, Counting and Cardinality; Grades K-5, Operations and Algebraic Thinking.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Fosnot, C. T., & Dolk, M. (2001). *Young mathematicians at work: constructing number sense, addition, and subtraction*. Portsmouth, N.H.: Heinemann.

Fosnot, C. T., & Dolk, M. (2001). Landscape of learning. Retrieved from: http://www.contextsforlearning.com/samples/k3LandscapeofLearning.pdf

Van de Walle, J.A., Karp, K.S., & Bay-Williams, J.M. (2016). *Elementary and middle school mathematics: Teaching developmentally*. Boston, MA: Pearson.

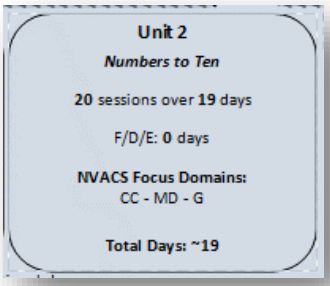
Van de Walle, J., Karp, K., Lovin, L., & Bay-Williams, J. (2014). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades Pre-K-2* (2nd ed.). Boston, MA: Pearson.

Kindergarten Unit 2: Numbers to Ten

Big Conceptual Idea: K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking (pp. 1-11), K-5 Progression on Measurement and Data (Data Part) (pp. 1-5), K-6 Progression on Geometry (pp. 1-7)

***Read the Bridges Unit Overview/Introduction for Unit 2 pp. i-vi. Also read each Module Overview for the current week's sessions and the current Session Summary**, along with details for the teaching of each session, as you work through Unit 2. These Introduction/Overview/Summary sections provide focus, clarity, vocabulary, definitions, and examples which support the critical "big mathematical ideas and understandings" for Kindergarten. This information supports professional decision-making within the Modules and Sessions as needed.*

Mathematical Background: Read Bridges *Unit 2 Overview* and *Introduction* (pp. i-vi)	**Unit Essential Question for the Teacher:** How will I use various models including five-frames, ten-frames, the number rack, tally marks, and finger patterns to make mathematical concepts visual? How will I support the construction of students' understandings of subitizing, counting, combinations within 5, and comparing?



Kindergarten Curriculum Pacing Framework: Balanced Calendar

Instructional note:

> *"If you learn something deeply, the synaptic activity will create lasting connections in your brain, forming structural pathways, but if you visit an idea only once or in a superficial way, the synaptic connections can "wash away" like pathways made in the sand" (Boaler, 2016, p. 1).*

Throughout *Unit 2*, behaviors and routines are being established that allow all kindergarten students to actively engage in making sense of problems. This development of a problem-solving mindset supports student learning throughout *Number Corner*, *Problems & Investigations* and independent or partner *Work Place* games. Students develop self-regulation and feel safe in the environment, so they are free to take risks and make mistakes.

They have also begun to use manipulatives, to make their thinking around mathematics visible, to focus their attention, to express and explain their thinking, and to notice details and patterns. These behaviors provide great opportunities for child watching within the *Problems & Investigation Sessions*, the *Number Corner Workouts* and *Work Places*. Teachers' understanding of the "big mathematical ideas" expected in the *Units* (clarified in the Overview/Introduction/Summary sections) provides the expertise for child watching, as well as the ability to identify partial understandings and misconceptions as students engage in the problems introduced. These observations inform instructional steps throughout each Bridges *Session* and provide the understanding required to support and scaffold each students' learning.

Establishing classroom management and routines:
Throughout *Unit 2* and during *Number Corner Workouts* (*Problems & Investigations, Work Places, Calendar Grid, Calendar Collector, Computational Fluency, Days in School,* and *Number Line*) continue to**:**

- Build independence in **routines and patterns of student engagement** for active learning, using the materials and the mathematics in Bridges *Unit 2*. These routines and behaviors continue as critical structures for your classroom management and student interactions. **Teach routines to independence and stop to reteach desired behaviors as needed!**
- Engage students continually in the **Mathematical Practices** - persevering in making sense, thinking relationally and mathematically, explaining and justifying, applying what they know to other meaningful situations, using appropriate and efficient tools, working and communicating precisely, using patterns, and working efficiently (NVACS, 2010, pp. 6-8). Bridges Math Practice Posters are available to print.
- Engage in **authentic conversations and problem solving** around the content of the *Sessions* and *Workouts*.
- Use the **manipulatives, models, and representations** to help make the mathematics visual, engaging and fun for students.
- Support students' development of **strategic behaviors/strategies** for problem solving. What are students thinking in their own heads and doing to "work" at solving the problem? Independently, what behaviors do they show at a point of error or confusion?
- Watch for development of strategic behaviors within the mathematics content by **child watching** and using the formative and formal Bridges ***Assessments*.**
- Engage students in thinking about and understanding the **big mathematical ideas of the mathematics content** expected in kindergarten.
- The **"rigor"** of Bridges instructional materials is dependent on **how** the teacher engages the students in the activities and conversations of the *Sessions*. The depth and focus of these interactions, aligned with an understanding of student needs, drives mathematics development for each student through the practices stated above. Immediate intensification of instruction should occur during the daily *Problems & Investigations Sessions* (including *Work Places*) and *Number Corner* interactions.

The mathematics content of *Unit 2*:
Children construct understandings in connected and integrated ways, not as isolated, individual pieces. Therefore, continually ask students to explain how they are problem solving ("How did you know?", "What made you think that?", etc.) to make explicit the connections students are already making from previous learning, to strengthen the synaptic connections being constructed, and to encourage the continuance of this sense-making behavior (NVACS, 2010, p. 6).

- Support and instruct to the development of the **big mathematical ideas** of:
    - **Magnitude** - knowing/identifying which group has more – easier than cardinality. References the size or quantity embedded in the number.
    - **One-to-one correspondence** - A child understands that each item to be counted has a "name" and that we only count each item once during the counting process. The child needs to make a physical or mental "tag" of the "to be counted" and the "counted" items and keeps them separate.
    - **Cardinality** - The result of counting to 7 means that I have seven things. Cardinality answers the question, "How many?" with one symbol (word) representing the whole amount. Thus, number means "amount".
    - **Organizing and keeping track** - Example: When counting a large group of objects, a student counts 10 objects and sets them aside, counts to twenty and again moves those next 10 objects aside.
    - **Hierarchical inclusion/Nesting** - 6, 5, 4, 3, 2… are all contained/"nested" in 7.
    - **Equivalence -** the understanding that different combinations are equal in value. For example, 6+4 = 2+2+6. Language to support equivalence: "Six and four is the same as 2 and 2 and 6", "same as", "same quantity as", "equivalent".
- Watch for students' attempts at thinking about and using these **strategic behaviors/strategies** to demonstrate their emerging understandings of the big mathematical ideas:
    - **Trial and error** - reasoning with number through a trial process to construct the mathematical understandings and then checking. Children often use this process when trying to form understandings about new strategies or acquire a systematic process. This is different from "guess and check" in that they are trying to apply understanding instead of using random guessing.
    - **Stable Order (Counting)** - the understanding that every time we use number names to count a set of items, the order of the number names does not change. In English the order of the number names is always one, two…etc. Connected to the idea of synchrony.
    - **Subitizing** - the ability of the brain to automatically realize the size of sets without counting. Often this can only be done with five or fewer objects in each set. (There are two types: **perceptual** (described) and **conceptual** which can be identified by the shape as in dice/dominos.).
    - **One-to-one tagging** - giving each item in a set a "tag" – one and only one tag is used for each item. Often, early counters may tag each item yet may not keep track of their counts. Thus, they ~~will~~ end up counting each item more than one time.
    - **Synchrony** - one word for every object (count and touch).
    - **Counting on** - the ability to mentally "hold" a number and then add to that number using counting (groups or singles). For example, when adding 48 and 6, a child/student may start with 48 and count on 6 times: 48 (+1), 49 (+1), 50 (+1), 51 (+1), 52 (+1), 53 (+1) is 54.
    - **Uses the 5-structure** - Example: 6+7 = 5+1+5+2; using anchors of 5 with larger numbers.

Over time, with supportive and scaffolded instruction and interactions, students employ more efficient and effective use of counting strategies. This leads to and confirms deeper and more expanded understandings. Intentionality with the context and range of numbers students work with in mathematics supports this number sense development.

Unit 2 also introduces shapes and patterns (K.G and K.OA) supporting the critical understandings of spatial relationships, a focus concept for kindergarten.

On-going enrichment:

- The ***Skills Across the Grade Level*** chart in the *Introduction* section (*Unit 2*, p. v) shows that K.CC.1-6 are developed in this *Unit* along with K.OA.3. Students use various models to see relationships, strengthen subitizing skills, and build number sense within 10 and with groups of 5. Composing shapes (K.G.6) is introduced (see p. v). This is important information for those day-to-day professional instructional decisions that have to be made within each *Session* as to what discussions or activities to extend, cut short, emphasize, skip, etc.
- Expect all students to engage in the math.

Essential Academic Vocabulary

Use these words consistently during instruction.

Essential Academic Vocabulary: (first time explicitly taught) *indicates *Word Resource Cards* are available in the materials		Review Academic Vocabulary: (Vocabulary explicitly taught in previous *Units*, or *Number Corner*)	
row*	below*	*one*, two, three, four, five, six,*	*most**
compare*	beside*	*seven, eight, nine, ten*	*number**
half*	hexagon*	*attribute**	*less than**
above*	rhombus*	*circle**	*pattern**
next to*	trapezoid*	*greater than**	
square*	zero	*triangle**	
rectangle*			

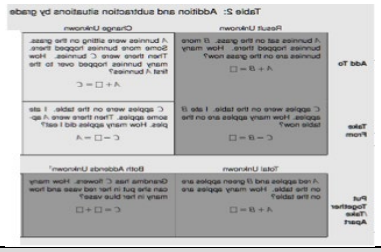
Additional terminology that students may need support with: problem, same/different, five-frame, ten-frame, in all, bottom/top, horizontal, left/right, numeral, middle, tally, extend.

Standards listed in **bold** indicate a focus of the lesson.

NVACS (Content and Practices)	Mathematical Development of the Big Idea	Instructional Clarifications & Considerations
Module 1- Session 1: Two Red, Three Blue		
K.CC.4 **K.CC.5** **K.OA.1** K.OA.3 MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Counting to 20 by 1s is also in *Units 1 & 4*. • Reading numbers from 0 to 10 continues to develop in *Units 3 & 4*. • Counting collections in different ways becomes a focus in *Unit 3*. **Beginning with the Big Idea and key Strategic Behaviors:** • **making combinations (pairs) of numbers to make 5** **Developing:** • **using 1-to-1 correspondence** • understanding cardinality • **subitizing** • **counting** (to 20)	**Guiding Questions:** • Why would you not count a dot more than once to find out how many? • What is similar and what is different about these two five-frames? • Which attributes are the same and different (on regular and irregular five-frame cards)? • How can I represent what I see on the five- frame using my fingers? **Instructional Notes:** • Visual models are regular five-frame display card and fingers. • The regular, two-color five-frame display cards are introduced to develop understandings of subitizing and combinations (see sidebar note p. 4). **Literature Connection:** • *Five Creatures* by Emily Jenkins Lockhart (sorting out similarities and differences, combinations to 5). **Number Corner Connections:** • Sept., Feb. revisit count to 20 by 1s. • Sept.-Dec. revisit reading numbers from 0-10. • Counting collections in different ways is an introductory concept. It is explored again in Sept.-Dec. **Writing and Enrichment:** • Support and Challenge ideas are suggested on p. 5 for one-to-one correspondence, finger patterns, and subitizing, or for flexibility with combinations. **Child Watching and Assessment:** • See *Assessment Guide*, Bridges Unit Assessments tab (pp. 11-21) for supports with observational assessments, students to watch for (p. 13), answer keys for assessments, scoring guides, and Reteaching Suggestions.
Module 1- Session 2: Funny Five-Frame Flash		
K.CC.4a K.CC.4b **K.CC.5** **K.OA.1** K.OA.3 MP.1 **MP.3** MP.7	**Access Prior Learning and Connections to Future Learning:** • All *Units* continue to cover combinations to 5. *Work Places Spill Five Beans, Pennies & Mats,* and *Beat You to Five* provide repeated practice with this concept. **Beginning with the Big Idea and key Strategic Behaviors:** • **making combinations (pairs) of numbers to make 5**	**Guiding Questions:** • Why would you not count a dot more than once to find out how many? • What is similar and what is different about these two five-frames? • Which attributes are the same and different (on regular and irregular five-frame cards)? • How can I represent what I see on the five- frame using my fingers? • How are finger patterns and five-frames related? • How can use cubes to represent dots on a five-frame? • Is there more than one way to make five using red and blue dots? **Instructional Notes:** • Visual models are regular five-frame display card, irregular five-frame display cards, and fingers. • The irregular, two-colored five-frame display cards are introduced to extend instant recognition (subitizing) beyond consistent dot patterns (see sidebar note p. 8). ***-continues on next page-***

	Developing: • understanding 1-to-1 correspondence (to 10) • understanding cardinality • **subitizing** • **counting** (to 20)	• Students make connections about quantity by using various models (fingers, dots, and cubes). **Writing and Enrichment:** • In journals or on paper, use red and blue dots (or crayons) and show 5 in two ways using five-frames. • *Home Connection* p. 11 and *Home Connection* tab pp. 17-21
Module 1- Session 3: Building Ten		
K.CC.4b **K.CC.5** K.OA.3 K.OA.4 MP.1 **MP.3** **MP.6** MP.7	**Access Prior Learning and Connections to Future Learning**: • All *Units* continue to cover the concept of decomposing numbers less than or equal to 10 into pairs. **Beginning with the Big Idea and key Strategic Behaviors:** • **decomposing numbers less than or equal to 10** **Developing:** • understanding 1-to-1 correspondence • understanding cardinality • **subitizing**	**Guiding Questions:** • What is an efficient way or strategy to "read" a ten-frame? (Discuss using top row first, bottom row second, and then determining how many in all) • Does the order in which I count the objects change the total number of objects? • How can I use a ten frame to figure out how many more dots would make 10? **Instructional Notes:** • Visual models are ten-frame five-wise display cards, and cubes. • Students now build quantities from ten-frame five-wise display cards. **Literature Connection:** • *How Do Dinosaurs Count to 10* by Jane Yolen and Mark Teague. **Number Corner Connections:** • Decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. This will be revisited in Oct.-May. **Writing and Enrichment:** • In math journals or on paper/white board consider having students represent the following problem: I have 10 oranges. Some are in the tree and some are in the basket. How many different ways could the oranges be arranged?
Module 1- Session 4: Count and Compare Dots		
K.CC.4 K.CC.5 **K.CC.6** K.CC.7 MP.1 **MP.6** MP.7	**Access Prior Learning and Connections to Future Learning:** • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is revisited in all *Units.* **Developing the Big Idea and key Strategic Behaviors:** • using 1-to-1 correspondence • understanding cardinality • subitizing • **recognizing magnitude** • **comparing <, >, =**	**Guiding Questions:** • How do you know if you have more or less than your partner? • What is another way to describe the word more? • What is equal? How can you find out if two cards are equal? • Can you find out what is more or less without counting? With counting? **Instructional Notes:** • Visual models are the ten-frame five-wise dot cards. • Students see the relationships of more than and less than on the ten-frame dot cards used in the game and linking the quantity counted with the written numeral. **Literature Connections:** • *Just Enough Carrots* by Stuart Murphy • *More or Less* by Stuart Murphy **Number Corner Connections:** • Identifying whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is a developing concept. Revisited in Oct., Dec., Jan., Feb., Mar., Apr., and May. **Writing and Enrichment:** • For suggested gestures for ELL support, see the note on p. 18.
Module 1- Session 5: Introducing Work Places 2A Count & Compare Dots		
K.CC.4 K.CC.5 **K.CC.6** K.CC.7 K.MD.3 MP.1 **MP.6** MP.7	**Access Prior Learning and Connections to Future Learning:** • Do you play games at home? Whom do you play with? • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is revisited in all *Units*. • Comparing should not be a mastered skill yet. Reteach in a small group rather than going back to previous lessons in whole group.	**Guiding Questions:** • Why is it important to know how many? • Is there more than one way to count a dot card? • How do you know if you have more or less than your partner? • What is equal? How can you find out if two cards are equal? • Can you find out what is more or less without counting? With counting? **Instructional Notes:** • Visual models are the game board visuals and the ten-frame five-wise dot cards. • Students play game in partners. • Consider using the online digital display tool found on the Bridges web site (note the second page), (p. 2, includes spinner and cards), in addition to teacher/student modeling. ***-continues on next page-***

	Developing the Big Idea and key Strategic Behaviors: • using 1-to-1 correspondence • understanding cardinality • subitizing • **recognizing magnitude** • **comparing <, >, =**	**Literature Connection:** • *Every Buddy Counts* by Stuart Murphy **Number Corner Connections:** • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is a developing concept. This is revisited in Oct., Dec., Jan., Feb., Mar., Apr., and May. **Writing and Enrichment:** • See *Teacher Masters* (p. T1) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (p. T2) for game variations. • *Home Connection* p. 23 and *Home Connection* tab pp. 23-29. **Child Watching and Assessment:** • **Count and Compare CHECKPOINT** – observing students playing the game in pairs during *Work Places* (see p. 23 and T4). Also see scoring and reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab pp. 17-18.
Module 2- Session 1: Two-Color Ten-Frames		
K.CC.4 K.CC.5 **K.OA.3** MP.1 **MP.3** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Students begin to develop the combinations of 5. All *Units* cover this concept. *Work Places Spill Five Beans, Pennies & Mats,* and *Beat You to Five* provide repeated practice with this concept. **Beginning with the Big Idea and key Strategic Behaviors:** • understanding hierarchical inclusion • **using part /whole relationships** **Developing:** • using 1-to-1 correspondence • understanding cardinality • subitizing	**Guiding Questions:** • Is there more than one way to make 10 using red and white dots? • How do I know that I have found all of the ways to make 10? **Instructional Notes:** • Visual models are red and white ten-frame display cards and cubes. • The red & white ten-frame cards are introduced to support recognition of two distinct quantities as a foundation for addition and subtraction later and to align with the Number Rack, which they will see tomorrow (see sidebar note p. 4). **Literature Connections:** • *Mouse Count* by Ellen Stoll Walsh • *10 Flashing Fireflies* by Philemon Sturgess **Writing and Enrichment:** • After listening to the story, *Mouse Count*, solve the following problem: How many different ways could 10 mice be arranged with some in the jar and some in the grass? • Ideas for Literature Connections, ELL, Support, and Challenge are suggested on p. 5.
Module 2- Session 2: Building a Number Rack		
K.CC.4 **K.CC.5** MP.1 **MP.5** MP.7	**Access Prior Learning and Connections to Future Learning:** • What do you think you would do with this math tool? How is it the same/different than the dots, or fingers, or cubes? • Count objects one by one, and say the numbers in the standard order, pairing each object with only one number name, and identify the number of objects as the last number said are all addressed again in *Units 1, 3, 4, & 6.* **Beginning with the Big Idea and key Strategic Behaviors:** • **Recognizing hierarchical inclusion** **Developing:** • using 1-to-1 correspondence • understanding cardinality subitizing	**Guiding Questions:** • How can numbers be represented? • How are number racks and ten-frames related? • Why is a number rack useful? **Instructional Notes:** • Visual models are student-created number rack and the horizontal ten-frame. • Students build and explore with the number rack to develop critical understandings of relationships of numbers; they are also introduced to the linear ten-frame which aligns with the number rack. • Number rack materials **are not** replaced by WCSD but are available to order through the *Math Learning Center Store*. They can also be created with red and white beads, pipe cleaners, and cardboard or paper plates. Refrain from giving the students pre-made number racks – the making of this tool is important for students' conceptual understandings, and it provides an opportunity to child watch. **Literature Connection:** • *Fish Eyes* by Lois Ehlert **Number Corner Connections:** • All months explore these concepts - Count objects one by one, saying the numbers in the standard order and pairing each object with only one number name, and identify the number of objects as the last number said. ***-continues on next page-***

		Writing and Enrichment: • Model how to write a number story using the red and white beads (e.g. I have 5 pets. 2 are cats. The rest are dogs. How many dogs do I have?) • Students create their own number stories orally using their number racks and then record. • As you are working with number stories refer to the K-5 Progression on Counting and Cardinality and Operations and the Algebraic Thinking document (linked above) on Table 2, p. 9 for kindergarten problem subtypes. • *Home Connection* p. 10 *and Home Connection* tab p. 31-32. 
Module 2- Session 3: Numbers and Number Racks		
K.CC.4 **K.CC.5** MP.1 MP.5 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Count objects one by one, and say the numbers in the standard order, pairing each object with only one number name, and identify the number of objects as the last number said are all addressed again in *Units 1, 3, 4, & 6.* **Beginning with the Big Idea and key Strategic Behaviors:** • **recognizing hierarchical inclusion** **Developing:** • using 1-to-1 correspondence • **understanding cardinality** • subitizing	**Guiding Questions:** • What is different between your number rack and my number rack? • How can numbers be represented? How are number racks and ten-frames related? • How far away from 5 is your number? • How far away from 10 is your number? **Instructional Notes:** • Visual models are the number racks and student ten-frame dot cards. • Students learn to use the Number Rack with precision and make connections with the ten-frame dot cards; starting position for the Number Rack is having all beads to the right and beads are pushed to the left when problem-solving. • Students are encouraged to push the beads in groups and make as few moves as possible. **Literature Connections:** • *Five Creatures* by Emily Jenkins • *12 Ways to Get to 11* by Eve Merrian **Number Corner Connections:** • All months explore these concepts - Count objects one by one, saying the numbers in the standard order and pairing each object with only one number name, and identify the number of objects as the last number said. **Writing and Enrichment:** • Model how to write a number story using the red and white beads (e.g. I have 5 pets. Two are cats. The rest are dogs. How many dogs do I have? • Students create their own number stories orally using their number racks and then record. • Differentiation ideas for students developing fluency within 5 or able to work with combinations to 10 are suggested on p. 15.
Module 2- Session 4: Introducing Work Place 2B Numbers & Number Racks		
K.CC.4a K.CC.4b **K.CC.5** MP.1 MP.5 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Count up 10 objects arranged in a line, rectangular array or circle to answer "how many" is addressed again in *Unit 4.* **Beginning with the Big Idea and key Strategic Behaviors:** • **recognizing hierarchical inclusion** **Developing:** • using 1-to-1 correspondence • **understanding cardinality** • **subitizing**	**Guiding Questions:** • How many red beads are there? How many white beads are there? How many in all? • Can you tell the number of red beads without counting each one? How about the white ones? • If you see five red beads, can you keep counting the white beads from there (counting on)? **Instructional Notes:** • Visual model is the number rack. • When students draw connections between the groups of 5 and 10 on the ten frame and the number rack, they are actively looking for and making use of structure. **Number Corner Connections:** • Developing - count up 10 objects arranged in line, rectangular array or circle to answer how many? Addressed again in Sept.-Dec. **Writing and Enrichment:** • See Teacher Masters (M2 S4 p. T2) of *the Work Place Guides for Differentiation* ideas. See *Work Place Instructions* (p. T3) for game variations.

Module 2- Session 5: Show Me Five		
K.CC.4a K.CC.4b K.CC.5 **K.OA.1** **K.OA.3** MP.1 **MP.5** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • All units cover recognize the number of objects in a collection of 6 or fewer, and build combinations to 5. • Memorizing the combinations and connecting the quantities is not necessary yet. Students need and will get many practice opportunities throughout the year. The goal is to promote flexible ways of representing and recognizing quantities. **Beginning with the Big Idea and key Strategic Behaviors:** • **Understanding part/whole relations** (to 5) • **Combining (pairs) of numbers to make 5** **Developing:** • using 1-to-1 correspondence • understanding cardinality • **subitizing**	**Guiding Questions:** • How many red beads are there? How many white beads are there? How many in all? • Can you tell the number of red beads without counting each one? How about the white ones? • If you see five red beads, can you keep counting the white beads from there (counting on)? • Which pairs of numbers make 5? **Instructional Notes:** • Visual models are regular five-frame display cards and number racks. • Students work again with building combinations to 5 and make connections between dots, fingers, cubes, and the number rack. • Number rack beads are divided into 5s and then moved to the middle for problem-solving. • Keep student number racks available for student use as a problem solving tool throughout the year. **Number Corner Connections:** • Developing: recognize the number of objects in a collection of 6 or fewer; build combinations to 5; months Oct.-May explore these concepts. **Writing and Enrichment:** • *Home Connection* p. 22 and *Home Connections* tab pp. 33-34.
Module 3- Session 1: Craft Stick Tallying, Day 1		
K.CC.1 K.CC.4 **K.CC.5** K.OA.1 MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Recognize the number of objects in a collection of 6 or fewer and build combinations to 5 are covered in all *Units*. **Beginning with the Big Idea and key Strategic Behaviors:** • **Understanding part/whole relations** (to 5) **Developing:** • using 1-to-1 correspondence • **understanding cardinality** • **subitizing**	**Guiding Questions:** • How can I use tallies to keep track of a count? • How do groups help me when I count? **Instructional Notes:** • Visual models are craft stick and tally display cards. • Students continue to visualize groups of 5 with tally sticks and begin to count on to "5 and some more". • Teachers are tempted to use the rhyme 1,2,3,4, shut the door. This creates a misconception that the diagonal stick is not counted. An easy fix is to say 1,2,3,4. Then 5 shuts the door. **Literature Connection:** • *Tally O'Malley* by Stuart Murphy **Number Corner Connections:** • Developing - recognize the number of objects in a collection of 6 or fewer; build combinations to 5.
Module 3- Session 2: Craft Stick Tallying, Day 2		
K.CC.1 K.CC.4 **K.CC.5** K.OA.1 MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Recognize the number of objects in a collection of 6 or fewer and build combinations to 5 are covered in all *Units*. **Beginning with the Big Idea and key Strategic Behaviors:** • **Understanding part/whole relations** (to 5) **Developing:** • using 1-to-1 correspondence • **understanding cardinality** • **subitizing**	**Guiding Questions:** • How many sticks do you see? How do you know? • How do groups help me when I count? **Instructional Notes:** • Visual models are craft stick and tally display cards. • Teachers are tempted to use the rhyme 1,2,3,4, shut the door. This creates a misconception that the diagonal stick is not counted. An easy fix is to say 1,2,3,4. Then 5 shuts the door. **Literature Connection:** • Reread *Tally O'Malley* by Stuart Murphy **Number Corner Connections:** • Developing – Recognize the number of objects in a collection of 6 or fewer; build combinations to 5; months Oct.-May explore these concepts.

Module 3- Session 3: Which Bug Will Win?

K.CC.6 K.OA.3 K.MD.3 MP.1 MP.6 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Recognize the number of objects in a collection of 6 or fewer is revisited in all *Units*. • The game provides exposure to representing data in a graph, also addressed in *Units 5* and *7*. **Beginning with the Big Idea and key Strategic Behaviors:** • **comparing measurable attributes** **Developing:** • using 1-to-1 correspondence • **understanding cardinality** • **subitizing**	**Guiding Questions:** • Which bug will win in Spinner A? Which bug will win in Spinner B? Why? • If want ladybugs to win, which spinner would you choose? • Why did other students who used the same spinner get different results? • How many sets of 5 are in 10? How do you know? **Instructional Note:** • Visual models are graphs. **Number Corner Connections:** • Introductory - representing data in a graph. The game provides exposure to this and is addressed in Oct., Dec., March, April, and May. **Writing and Enrichment:** • *Home Connection* p. 14 and *Home Connection* tab pp. 35-37.

Module 3- Session 4: Introducing Work Place 2C Which Bug Will Win?

K.CC.6 K.OA.1 K.MD.2 MP.1 MP.6 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Recognize the number of objects in a collection of 6 or fewer is revisited in all *Units.* • The game provides exposure to representing data in a graph, also addressed in *Units 5* and *7*. **Beginning with the Big Idea and key Strategic Behaviors:** • **comparing measurable attributes** **Developing:** • using 1-to-1 correspondence • **understanding cardinality** • **subitizing**	**Guiding Questions:** • Which bug will win in Spinner A? Which bug will win in Spinner B? Why? • If want ladybugs to win, which spinner would you choose? • Why did other students who used the same spinner get different results? • How many sets of 5 are in 10? How do you know? **Instructional Notes:** • Visual models are graphs. • Consider using 2 different colors for marking spins so combinations of 5 are more visible. **Number Corner Connections:** • Introductory - representing data in a graph. The game provides exposure to this and is addressed in months Oct. Dec., March, April, and May. **Writing and Enrichment:** • Provide a blank spinner. Create a spinner that has more spiders than ladybugs. • See *Teacher Masters* (p.T2) of the *Work Place Guides for Differentiation* ideas. • Note suggested sidebar note on p. 16 for analyzing data from this *Work Place*. **Child Watching and Assessment:** • **Number & Number Racks CHECKPOINT** – observe students during *Work Places* (see p. 17 and T4). Also see scoring and reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab pp. 20-21.

Module 3- Session 5: Dots, Tallies & Numbers Bingo

K.CC.5 K.OA.1 MP.1 **MP.7** MP.8	**Access Prior Learning and Connections to Future Learning:** • Count up 10 objects arranged in line, rectangular array or circle to answer "how many" is addressed again in *Unit 4*. • Recognize the number of objects in a collection of 6 or fewer is revisited in all *Units*. **Beginning with the Big Idea and key Strategic Behaviors:** • **recognizing hierarchical inclusion** • **using part/whole relations** • **using the five-structure** **Developing:** • using 1-to-1 correspondence • understanding cardinality • **subitizing**	**Guiding Question:** • How are ten frames, numbers and tallies similar? **Instructional Notes:** • Visual models are ten-frame five-wise display cards, tally display cards, and number cards. • Students build flexibility with number recognition by using both dots/tallies, and Number Cards. **Number Corner Connections:** • Developing - count up 10 objects arranged in line, rectangular array or circle to answer how many? Addressed again in Sept.-Dec. • Recognize the number of objects in a collection of 6 or fewer. Months Oct.-May explore these concepts. **Writing and Enrichment:** • Number Collection Box: Show all the ways you can make ____. Students might use dots, number, tallies, objects, dominoes, number rack, and so forth.

Module 3- Session 6: Introducing Work Place 2D Beat You to Ten		
K.CC.4a **K.CC.5** **K.CC.6** K.OA.4 MP.1 **MP.6** MP.7	**Access Prior Learning and Connections to Future Learning:** • All *Units* cover the concept of decomposing numbers less than or equal to 10 into pairs/sets. **Beginning with the Big Idea and key Strategic Behaviors:** • **using the five-structure** **Developing:** • using 1-to-1 correspondence • understanding cardinality • **subitizing**	**Guiding Questions:** • Which is the best spot for your spinner to land? • How do I determine how many more cubes I need to win? • Is there more than one way to get to 10 (win)? • How many sets of 5 are in 10? **Instructional Notes:** • Visual models are 2 colors of cubes. • Students build towers of 5 with cubes to make combinations of 5 visible. **Writing and Enrichment:** • See *Teacher Masters* (pp. T7 & T8) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (p. T8) for game variations. • *Home Connection* p. 25 *and Home Connection* tab pp. 39 & 40.
Module 4- Session 1: Butterfly Quilt, Part 1 (optional)		
K.G.1 **K.G.6** MP.1 MP.7 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Patterning to algebra connection **Beginning with the Big Idea and key Strategic Behaviors:** • recognizing shapes and attributes • patterning • composing simple shapes to form larger shapes	**Instructional Notes:** • **Optional *Session* or time can be used as an F/D/E day.** • Visual models are square and rectangle pattern pieces.
Module 4- Session 2: Butterfly Quilt, Part 2 (optional)		
K.G.1 **K.G.6** MP.1 **MP.3** MP.7 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Patterning to algebra connection **Beginning with the Big Idea and key Strategic Behaviors:** • recognizing shapes and attributes • patterning • composing simple shapes to form larger shapes	**Instructional Notes:** • **Optional *Session* or time can be used as an F/D/E day.** • Visual models are squares and rectangle pattern pieces. **Writing and Enrichment:** • The *Home Connection* p. 10 and *Home Connection* tab pp. 41-42.
Module 4- Session 3: Pattern Block Puzzles		
K.G.1 K.G.2 **K.G.6** **MP.1** MP.7 MP.8	**Access Prior Learning and Connections to Future Learning:** • Identify and describe shapes and compose simple shapes to form larger shapes are also covered in *Units 5* and *6*. Emphasize that students can describe shapes initially using visual descriptions (long, pointy, etc.). **Beginning with the Big Idea and key Strategic Behaviors:** • recognizing shapes and attributes – hexagon, rhombus, triangle, trapezoid • **composing simple shapes to form larger shapes**	**Guiding Questions:** • How do the pattern block shapes relate to one another? • How can I use smaller shapes to form larger shapes? **Instructional Notes:** • Visual models are pattern blocks and 2-D shape puzzles. • Step 1 - Remember pattern blocks have thickness. The trapezoid pattern block is not a trapezoid but a block with a face of a trapezoid. • This lesson leads into a discussion of strategy by decomposing and composing shapes. • Consider using the online digital display tool found on the Math Learning Center web site (note the second page), https://www.mathlearningcenter.org/resources/apps/pattern-shapes, in addition to teacher/student modeling. **Literature Connection:** • *Grandfather Tang's Story* by Ann Rompert (Tangrams are special set of shapes to compose…focus on the composing new shapes aspect of the story.) **Number Corner Connections:** • Introductory - Identify and describe shapes explored again in months Sept. and Nov.

Module 4- Session 4: Introducing Work Place 2E Pattern Block Puzzles		
K.G.1 **K.G.2** **K.G.6** **MP.1** MP.8	**Access Prior Learning and Connections to Future Learning:** • Identify and describe shapes and compose simple shapes to form larger shapes are also covered in *Units 5* and *6*. Emphasize that students can describe shapes initially using visual descriptions (long, pointy, etc.). **Beginning with the Big Idea and key Strategic Behaviors:** • recognizing shapes and attributes – hexagon, rhombus, triangle, trapezoid • **composing simple shapes to form larger shapes**	**Guiding Questions:** • How do the pattern block shapes relate to one another? • How can I use smaller shapes to form larger shapes? **Instructional Notes:** • Visual models are pattern blocks and 2-D shape puzzles. • Consider using die cut pattern blocks if available instead of hand cutting. Punch-out pattern blocks are available to purchase on the Bridges web site and various other retailers. • Step 1 - Remember that pattern blocks have thickness. The trapezoid pattern block is not a trapezoid but a block with a face of a trapezoid. • This lesson leads into a discussion of multiple solutions by decomposing and composing shapes in more than one way. **Literature Connection:** • *Grandfather Tang's Story* by Ann Rompert (Tangrams are special set of shapes to compose…focus on the composing new shapes aspect of the story.) **Number Corner Connections:** • Introductory - Identify and describe shapes. Explored again in Sept. and Nov. **Writing and Enrichment:** • See *Teacher Masters* (p. T4) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (p. T5) for game variations. • The *Home Connection* p. 17 and *Home Connection* tab pp. 43-45.

References

Battista, M. T. (2012). *Cognition-based assessment & teaching of addition and subtraction: Building on students' reasoning.* Portsmouth, NH: Heinemann.

Battista, M. T. (2012). *Cognition-based assessment & teaching of geometric shapes*: B*uilding on students' reasoning.* Portsmouth, NH: Heinemann.

Boaler, J. (2016). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages, and innovative teaching.* San Francisco, CA: Jossey-Bass & Pfeiffer Imprints.

Boaler, J. (n.d.). *Seeing as understanding: The importance of visual mathematics for our brain and learning.* Retrieved May 12, 2017, from https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/Visual-Math-Paper-vF.pdf

Carpenter, T., Fennema, E., Loef Franke, M., Levi, L., Empson, S.B. (2015). *Children's mathematics: Cognitively guided instruction* (2nd ed.). Portsmouth, NH: Heinemann.

Chapin, S. H., & Johnson, A. (2006). *Math matters: Understanding the math you teach, Grades K-8.* Sausalito, CA: Math Solutions Publications.

Council of Chief State School Officers. (2010). The Nevada Academic Content Standards. Retrieved from http://www.doe.nv.gov/uploadedFiles/nde.doe.nv.gov/content/Standards_Instructional_Support/Nevada_Academic_Standards/Math_Documents/mathstandards.pdf.

Common Core Standards Writing Team. (2011, May 29). *Progressions for the Common Core State Standards in Mathematics (draft). K, Counting and Cardinality; Grades K-5, Operations and Algebraic Thinking.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Common Core Standards Writing Team. (2015, March 6). *Progressions for the Common Core State Standards in Mathematics (draft). Grades K-5, Number and Operations in Base Ten.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Fosnot, C. T., & Dolk, M. (2001). *Young mathematicians at work: constructing number sense, addition, and subtraction*. Portsmouth, N.H.:

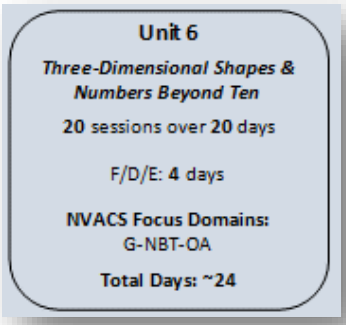
Fosnot, C. T., & Dolk, M. (2001). Landscape of learning. Retrieved from: http://www.contextsforlearning.com/samples/k3LandscapeofLearning.pdf

Van de Walle, J.A., Karp, K.S., & Bay-Williams, J.M. (2016). Elementary and middle school mathematics: Teaching developmentally. Boston, MA: Pearson.

Van de Walle, J., Karp, K., Lovin, L., & Bay-Williams, J. (2014). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades Pre-K-2* (2nd ed.). Boston, MA: Pearson.

Kindergarten Unit 6: Three-Dimensional Shapes & Numbers Beyond Ten

Big Conceptual Idea: K-6 Progression on Geometry (pp. 1-7) K-5 Progression on Number and Operations in Base Ten (pp. 1-5) K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking (pp. 1-11)



Kindergarten Curriculum Pacing Framework: Balanced Calendar

***Read the Bridges Unit Overview/Introduction for Unit 6 pp. i-vi. Read each Module Overview for the current week's sessions and the current Session Summary**, along with details for the teaching of each session, as you work through Unit 6. These Introduction/Overview/Summary sections provide focus, clarity, vocabulary, definitions, and examples for the "big mathematical ideas and understandings" critical to Kindergarten. This information will support your professional decision-making within the Modules and Sessions as needed.*

Mathematical Background: Read Bridges *Unit 6 Overview* and *Introduction* (pp. i-vi)	**Unit Essential Questions for the Teacher:** How do I support my students' use of precise mathematical vocabulary to describe similarities and differences among two-dimensional and three-dimensional shapes? How do I extend understanding and number sense of 5 and combinations within 5 to explore number sense of 10, and then to 10 and some more?

Instructional note:
Unit 6 extends the development of **spatial reasoning** into **comparisons of two-dimensional and three-dimensional shapes**. According to the *K-6 Progression on Geometry* (document linked above), the three most important goals for elementary geometry are: "Geometric shapes, their components (e.g., sides, angles, faces), their properties, and their categorization based on those properties; Composing and decomposing geometric shapes; Spatial relations and spatial structuring" (p.2). The first two *Modules* of *Unit 6* continue to provide opportunities for students to establish foundations for each of these understandings. Students are expected to name, sort, locate, describe by attributes, and construct two-dimensional and three-dimensional shapes. This work also supports *Mathematical Practice 7: Look for and make use of structure*, *Mathematical Practice 3: Construct viable arguments and critique the reasoning of others*, *Mathematical Practice 4: Model with mathematics*, and *Mathematical Practice 6: Attend to precision* (NVACS, 2010, pp.6-8).

There is also a heavy focus in *Unit 6* on the connections and relationships critical to the development of early number sense and operations and algebraic thinking. The interactions within this *Unit* are opportunities for students to build "procedural fluency" (flexibility, accuracy, efficiency, and appropriateness – see NVACS p.6) with **number combinations within 5** and flexible and sophisticated **use of strategies**. Understanding is extended to writing equations with careful attention given to the explicit **connection from models to written equations**. **Numbers within 10** and then **ten and some more** are also explored, laying foundational understanding for the base ten system. **Flexible understanding of 1s, 5s, and 10s** is encouraged and reinforced by relating known understandings of number to money (pennies, nickels, dimes) and to a variety of other models and tools (frames, cubes, craft sticks, fingers, number racks, links, collections, number lines, the calendar grid, etc.). In addition, explicit connections and relationships, provide opportunity for students to solidify the foundational skills and strategies of subitizing, counting, numeral writing, one-to-one tagging, forward and backward counting, organizing, quantity, counting on and using the five-structure. Important foundations for algebra continue to be supported with questions such as, "How many more?" or "How many in all?" These conceptual understandings of number, along with the geometric concepts and spatial reasoning developed, lay the mathematical foundations for all higher-level mathematics.

The mathematical content of *Unit 6*:
Children construct understandings in connected and integrated ways, not as isolated, individual pieces. Therefore, continually ask students to explain how they are problem solving ("How did you know?", "What made you think that?", etc.) so you can make explicit the connections students are already making from previous learning, strengthen the synaptic connections being constructed, and encourage the continuance of this sense-making behavior (NVACS, 2010, p. 6).

- Support and instruct to the development of the new **big mathematical ideas** of:
  - **Circle** - a two-dimensional (flat) shape made by drawing a curve that is always the same distance from a point called the center.
  - **Triangle** - a two-dimensional (flat) shape with 3 sides.
  - **Rectangle** - a two-dimensional (flat) shape with 2 pairs of parallel sides (4 sides total) and 4 right angles.
  - **Square** - a two-dimensional (flat) shape with 4 congruent sides and 4 right angles.
  - **Hexagon** - a two-dimensional (flat) shape with 6 sides.
  - **Trapezoid** - a two-dimensional (flat) shape with 4 sides, exactly 1 pair of which are parallel.
  - **Rhombus** - a two-dimensional (flat) shape with 4 congruent sides.

- **Cube** - a three-dimensional shape (solid) whose 6 faces are all squares.
- **Cone** - a three-dimensional shape (solid) with a circular or elliptical base and a curved surface that tapers to the vertex.
- **Sphere** - a three-dimensional shape (solid) constructed so that every point of the surface is the same distance from a point called the center.
- **Cylinder** - a three-dimensional shape (solid) with one curved surface and two congruent flat ends that are circular or elliptical.
- **Edge** - (1) Any side of a polyhedron's faces. (2) A line segment or curve where two surfaces of a geometric solid meet. (e.g., The edge is the circular portion or circumference of the base of a cone.)
- **Face** - a flat surface on a 3-dimensional figure. Some special faces are called bases. More generally, any 2-dimensional surface on a 3-dimensional figure.
- **Surface** - the boundary of a 3-dimensional object. The part of an object that is next to the air. Common surfaces include the top of a body of water, the outermost part of a ball, and the topmost layer of ground that covers the earth.
- **Pyramid** - a polyhedron made up of any polygonal region for a base, a vertex (apex) not in the plane of the base, and all of the line segments with one endpoint at the apex and the other endpoint on an edge of the base. All faces, except perhaps the base, are triangular. Pyramids get their name from the shape of their base.
- **Rectangular prism** - a prism with rectangular bases. The four faces that are not bases are either rectangles or parallelograms. For example, a brick models a rectangular prism in which all sides are rectangles.
- **Triangular prism** - a prism whose bases are triangles.
- **Vertex** or **corner** - the point at which the rays of an angle, the sides of a polygon, or the edges of a polyhedron meet. Plural is vertexes or vertices.

- Watch for students' attempts at thinking about and using these new **strategic behaviors/strategies** to demonstrate their emerging understandings of the big mathematical ideas:
  - **Drawing shapes**
  - **Constructing shapes**
  - **Writing equations**
  - **Using the five and/or ten-structure**

Over time, with supportive and scaffolded instruction and interactions, students come to more precise understandings of geometry; as well as, develop appropriate precision with mathematics content and vocabulary. Intentionality with the context and range of numbers students work with supports number sense development and expansion.

On-going enrichment:

- Continue noting the ***Skills Across the Grade Level*** chart in the *Introduction* section (*Unit 6*, pp. iv-v). Please note the standards for K.CC and K.G that are benchmarked to be secure by the end of this *Unit*. This is important information for those day-to-day instructional decisions you make within each *Session* as to what discussions or activities to extend, cut short, emphasize, skip, etc.
- Expect all students to engage in the math.

Essential Academic Vocabulary
Use these words consistently during instruction.

Essential Academic Vocabulary: (first time explicitly taught) *indicates *Word Resource Cards* are available in the materials	**Review Vocabulary:** (Vocabulary from *Number Corner* or prior *Units*)		
cone*	*one*, two, three,*	*between**	*sphere**
cube*	*four, five,*	*circle**	*three-dimensional (3-D) shape**
cylinder*	*ones**	*triangle**	*two-dimensional (2-D) shape**
edge*	*tens**	*square**	*longer than*
face*	*equation**	*rectangle**	*shorter than*
surface*	*addition*	*hexagon**	vertex or corner*
estimate*	*add**	*rhombus**	*penny**
pyramid*	*more**	*trapezoid**	*less than**
rectangular prism*	*less**	*attribute**	*greater than**
triangular prism *			
dime*			
expression*			

Additional terminology that students may need support with: sort, solid, short, tall, combinations, problem, in all, compare*, flat.

Standards listed in **bold** indicate a focus of the lesson.

NVACS (Content and Practices)	Mathematical Development of the Big Idea	Instructional Clarifications & Considerations
Module 1- Session 1: Mystery Bag Sorting		
K.CC.1 K.MD.3 K.G.1 K.G.2 K.G.3 **K.G.4** MP.1 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Describe and identify objects in the environment using geometric shape names and identify shapes regardless of orientation or size were addressed in *Unit 5*. • Use informal language to describe the parts and attributes of 2-D and 3-D shapes, as well as the similarities and differences between various 2-D and 3-D shapes are addressed in *Units 5* and *6*. • Identify shapes as two-dimensional or three-dimensional is reinforced from *Unit 5*. **Developing the Big Idea and key Strategic Behaviors:** • **classifying shapes** • identifying shapes by their defining attributes (2-D and 3-D) **Secure:** • naming shapes	**Guiding Questions:** • What shapes can we see in our world? • What makes shapes different from each other? • How can we sort shapes? How can a shape be described? • What is the difference between a 2-D and 3-D shape? **Instructional Notes:** • Visual models are a variety of 2-D and 3-D shapes which you have collected (save these shapes also for future *Sessions*). • For 2-D shapes, consider using the Bridges Shape Cards and/or the WCSD Shape options. The traced footprint of a 3-D shape is what creates the 2-D shape. The interior is not part of the shape, only the line segments creating the outline for the shape. • Due to possible confusions with shapes and attributes, skipping p. 1 in the *Student Book* is recommended. • Step 12 - 2-D squares do not have faces only 3-D shapes can have faces. Instead, for combined collections of 2-D and 3-D shapes consider sorting by: shapes that have thickness and shapes that do not have thickness; shapes that have lines and shapes that do not have lines; shapes that have corners and shapes that do not have corners. To increase opportunities for sorting, create a sorting rule for a collection of 3-D shapes only by attributes that are consistent to 3-D shapes. • Leave the collection of objects out for students to explore. Encourage sorting and building with the collection of objects. Students might generate ideas about shapes that have vertices/corners and those without rectangular or circular. Invite students to determine which objects roll, stack or slide. • Encourage students to bring in objects from home. Students can lead the activity and gain experience describing the features of the shapes. **Number Corner Connections:** • September Calendar: Circle, Rectangle, Triangle, Square, Shape Posters, Shape Hunter. • Describe and identify objects in the environment using geometric shape names. This is also addressed in Sept., Nov., and Dec. • Use informal language to describe the parts and attributes of 2-D and 3-D shapes, as well as the similarities and differences between various 2-D and 3-D shapes. • Reviewed, practiced or extended to higher levels: Identify shapes regardless of orientation or size. This is addressed in the months of Sept. and Nov. **Writing and Enrichment:** • Students create a math journal entry about how the class grouped their shapes. Provide a sentence frame such as: These shapes go together because _____. Additional prompts: What was the rule you used to sort? Could you have sorted them another way? • Consider adding Mystery Boxes: Take off the labels or cover the labels and have students guess what they think might be in the boxes. Attend to size, corners, etc. • *Student Books* are introduced for the first time.
Module 1- Session 2: What is a Sphere?		
K.CC.2 **K.OA.1** K.OA.2 K.G.1 **K.G.3** **K.G.4** MP.1 MP.2 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Use informal language to describe the parts and attributes of 2-D and 3-D shapes, as well as the similarities and differences between various 2- D and 3-D and shapes, are addressed in *Units 5* and *6*. • Identify shapes as two-dimensional or three-dimensional is reinforced from *Unit 5*.	**Guiding Questions:** • What makes a circle different than a sphere? • What is the difference between a 2-D and 3-D shape? • Why do shapes have names? • What makes a sphere different than a cube? **Instructional Notes:** • Visual models are various spheres and circles. • For 2-D shapes consider using the Bridges Shape Cards and/or the WCSD Shape Options. • Step 2: The examples, coin or CD/DVD are not true circles. These objects have thickness and are three-dimensional. • Discuss that a sphere can roll. Consider adding a roll, stack, slide exploration here to compare 3-D shapes. Bring out the modeling clay and experiment with making spheres. ***-continues on next page-***

	Developing and securing the Big Idea and key Strategic Behaviors: • **classifying shapes** • identifying shapes by their defining attributes (2-D and 3-D) **Secure:** • naming shapes	**Number Corner Connections:** • Expected to be secure within this unit - Use informal language to describe the parts and attributes of 2-D and 3-D shapes, as well as the similarities and differences between various 2-D and 3-D shapes. This is addressed in Sept. and Nov. months. • Reviewed, practiced or extended to higher levels - Identify shapes regardless of orientation or size. It is addressed in Sept. and Nov. months. **Writing and Enrichment:** • *Home Connection* p. 10 and *Home Connection* tab pp. 137-138.
Module 1- Session 3: Which Cylinder Holds More? Part 1 (omit)		
K.G.4 K.MP.1 **MP.7**	**Access Prior Learning and Connections to Future Learning:** **Beginning with the Big Idea and key Strategic Behaviors:** • Developing measurement concepts	**Instructional Notes:** • Omit all of *Session 3* and *Session 4* including the Cylinder Tens and Ones CHECKPOINT. • Important kindergarten concepts omitted here can be addressed by using a WCSD Additional *Work Place.* These are posted in the Kindergarten Teacher Community on Microsoft Teams (General Channel, Kinder Files, Bridges folder). • Consider doing the organizing of cubes as a separate lesson not connected to the capacity of a cylinder, if desired or needed by particular students.
Module 1- Session 4: Which Cylinder Holds More? Part 2 (omit)		
K.G.4 MP.1	**Access Prior Learning and Connections to Future Learning:** **Beginning with the Big Idea and key Strategic Behaviors:** • developing measurement concepts	**Instructional Notes:** • Omit all of *Session 3* and *Session 4* including the Cylinder Tens and Ones CHECKPOINT. • Important kindergarten concepts omitted here can be addressed by using a WCSD Additional *Work Place.* These are posted in the Kindergarten Teacher Community on Microsoft Teams (General Channel, Kinder Files, Bridges folder). • Consider the organizing of cubes as a separate lesson, not connected to the capacity of a cylinder, if desired or needed by particular students.
Module 1- Session 5: Shape Detectives		
K.CC.2 K.CC.6 K.CC.7 **K.MD.3** **K.G.1** K.G.2 K.G.3 **K.G.4** MP.1 MP.2 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Classify objects into categories and count the number objects in different categories are also covered in *Unit 7*. • Describe and identify objects in the environment using geometric shape names is reinforced from in *Unit 5*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing and securing the Big Idea and key Strategic Behaviors:** • **classifying shapes** • identifying shapes by their defining attributes (2-D and 3-D) **Secure:** • naming shapes	**Guiding Questions:** • What shapes can we see in our world? Where can I find shapes around my world? • How do we use shapes in daily life? • How are (shape)____ and _(shape)____ similar? different? **Instructional Notes:** • Visual models are shape display cards, Geoblocks, and various precise models of 3-D shapes. • Make sure you have some clear models and Geoblocks around the room. Modify preparation ideas on p. 22 to ensure clear models, such as the geometric solids, ABC cubes, dice, certain boxes, rubik's cube, tube of lip balm, etc. • Poor examples included: Cone: ice cream cones, traffic cone, teepee, party hat; Cube: unifix cube; Cylinder: drinking glasses, drinking straw, waste basket, rolled up paper, paper towel or toilet paper roll. • Focus in on the math vocabulary of edge, face, vertex, and surface. **Number Corner Connections:** • Expected to be secure - Classify objects into categories, count the number objects in different categories. This reappears in Oct, Dec., Jan, Feb, Mar, Apr, & May. • Describe and identify objects in the environment using geometric shape names. Addressed in Sept., Nov., and Dec. • Developing concept/skill - Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. This reappears in Oct., Dec.., Jan., Feb., Mar., Apr., & May. **Writing and Enrichment:** • *Home Connection* p. 25 and *Home Connection* tab pp. 139-141.
Module 2- Session 1: I Spy		
K.CC.1 **K.G.1** K.G.2 K.G.3 **K.G.4** K.G.5	**Access Prior Learning and Connections to Future Learning:** • Model two-dimensional shapes in the world by drawing them, describe and identify objects in the environment using geometric shape names, analyze and compare two-dimensional shapes and use informal	**Guiding Questions:** • What shapes can we see in our world? Where can I find shapes around my world? • How can a shape be described? • What questions can I ask to find out what shape it is quickly? **Instructional Notes:** • Visual models are various clear models of 2-D and 3-D shapes. • Step 3 - Paper is not a flat object. ***-continues on next page-***

MP.1 **MP.6** **MP.7**	language to describe their parts and attributes and identify shapes regardless of orientation or size are all reinforces from *Unit 5*. **Developing and securing the Big Idea and key Strategic Behaviors:** • classifying shapes • **identifying shapes by their defining attributes (2-and 3-D)** • **analyzing shapes** **Secure:** • naming shapes	• Step 4 & 7 - Due to developing fine motor abilities and visual-spatial reasoning, drawing 3-D shapes on boards may be challenging or frustrating. Consider skipping these steps or preparing students for mistakes. Use revised shape songs in Step 4 if needed. • Step 5 - Consider placing cut out shapes and 3-D shapes in various places around the room. When the students, spy the shape, discuss it and place it in a shape museum for students explore. Ensure you have actual 2-D and 3-D models around the room. Can you spy a round object that tells time that I can use to make a 2-D shape? • Block play to explore 3-D shapes is highly recommended. Pose questions to guide academic play and discuss how shapes are used to build structures. **Number Corner Connections:** • Expected to be secure - Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to. Months Sep., Nov., and Dec. feature this concept. • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. This is also addressed in Sept. and Nov. months. • Identify shapes regardless of orientation or size (addressed in Sept. and Nov. months).
Module 2- Session 2: Two-Dimensional & Three Dimensional Shapes Bingo		
K.CC.2 K.G.1 K.G.2 **K.G.3** **K.G.4** K.G.5 MP.1 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes and identify shapes regardless of orientation or size are reinforced from *Unit 5*. **Developing and securing the Big Idea and key Strategic Behaviors:** • **drawing shapes** **Developing to Secure:** • classifying shapes • **identifying shapes by their defining attributes (2 and 3-D)** • **analyzing shapes** **Secure:** • naming shapes	**Guiding Questions:** • What are attributes or properties of a shape? • How are shapes alike and different? What makes shapes different from each other? **Instructional Notes:** • Visual models are Geoblocks, • For beginners in geometry, identifying a 3-D object by viewing a 2-D sketch of the 3-D object is a more challenging skill. More scaffolding is needed here, and teachers might provide more experiences with actual solids that can be held and manipulated by students. • Step 3 and 8 – consider having a student find the shape in the room (having actual Geoblock available) rather than having students drawing shapes. • Consider giving each child a Bingo board. • Digital display tool found on the Bridges web site. **Number Corner Connections:** • Expected to be secure - Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. This is also addressed in Sept. and Nov. months. • Identify shapes regardless of orientation or size is addressed in Sept. and Nov. months. **Writing and Enrichment:** • *Home Connection* p. 10 and *Home Connection* tab pp. 143-147.
Module 2- Session 3: Introducing Work Place 6A Build Two Shapes		
K.CC.2 K.CC.4a K.CC.4b K.G.2 K.G.4 **K.G.5** MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Model 3-D shapes in the world by building them is reinforced from *Unit 5*. • Read numbers for 0 to 20 and count up to 20 objects to answer "how many?" is addressed in *Units 1, 2, 3, 4, & 7*. **Developing the Big Idea and key Strategic Behaviors:** • **constructing shapes** **Developing to Secure:** • classifying shapes • identifying shapes by their defining attributes (2-D and 3-D) • analyzing shapes **Secure:** • naming shapes	**Guiding Questions**: • Are the square polydrons really squares? • What are similarities and differences between triangle polydron pieces and triangles? • How can I use polydrons to build objects that look similar to 3-D shapes I know? **Instructional Notes:** • Visual models are Geoblocks, 3-D shape display cards, and polydrons. • Note: Polydron sides are not straight, so be careful when using them to build 3-D shapes. • Consider having the actual geoblocks available along with the 3-D shapes cards. **Number Corner Connections:** • Expected to be secure - Model 3-D shapes in the world by building them. Explored in Nov. • Count up to 20 objects to answer how many? Addressed in Feb. through May. Read numbers for 0 to 20. Reappears in all months. **Writing and Enrichment:** • Other shapes could be built and considered for "winning" in this *Work Place*, such as a pyramid or a hexagonal prism. • See *Teacher Masters* (M2 S3 p. T4) of the *Work Place Guides for Differentiation* ideas. • Optional *Unit 6 Work Place Log* available on p. T6.

Module 2: Session 4: Introducing Work Place 6B What's My Rule? (optional)

K.MD.3 K.G.1 K.G.2 K.G.3 **K.G.4** **K.G.5** MP.1 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Model two-dimensional shapes in the world by drawing them is reinforced from *Unit 5*. • Describe and identify objects in the environment using geometric shape names, analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes, and identify shapes regardless of orientation or size are all reinforced from *Unit 5*. **Developing and securing the Big Idea and key Strategic Behaviors:** • classifying shapes • identifying shapes by their defining attributes (2-D and 3-D) • analyzing shapes **Secure:** • naming shapes	**Guiding Questions**: • What shapes can we see in our world? • How can we sort shapes? How can a shape be described? **Instructional Notes:** • **Consider using one of the WCSD Additional *Work Places* instead of this lesson.** These are posted in the Kindergarten Teacher Community on Microsoft Teams (General Channel, Kinder Files, Bridges folder). **Use time for free exploration with shapes, completing the assessment and *Work Places*.** • A soda can is not a cylinder. Note previous comments. • Plate is not a circle, Use actual 2-D images for this activity. • Suggestions for Steps 7-9 - Ask students what rule did you use to sort the objects? Are we sorting objects by how many corners? Faces? 2-D? 3-D? Roll? Stack? Slide? **Number Corner Connections:** • Expected to be secure - Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to. Months Sep., Nov., and Dec. feature this concept. • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. This is also addressed in Sept. and Nov. months. • Identify shapes regardless of orientation or size is addressed in Sept. and Nov. months. **Writing and Enrichment:** • See *Teacher Masters* (M2 S4 p. T7) of the *Work Place Guides for Differentiation* ideas. **Child Watching and Assessments:** • **Three Dimensional Shapes & Their Attributes Checkpoint –** observe students in *Work Places* (see p. 18 and T9). Also see reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab p. 66.

Module 2- Session 5: Introducing Work Place 6C Make It Five

K.CC.4 K.CC.5 **K.OA.3** K.OA.5 MP.1 **MP.2** MP.7	**Access Prior Learning and Connections to Future Learning:** • Identify shapes regardless of orientation or size was addressed in *Unit 5*. • Decompose numbers less than or equal to 10 into pairs into more than one way and record is covered in all units except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is covered in *Units 2, 3, 4, 7 & 8.* **Beginning with the Big Idea and key Strategic Behaviors:** • writing equations **Developing:** • **composing and decomposing** • **modeling addition with objects and pictures** **Secure:** • using the five-structure	**Guiding Questions**: • How can I find the total when I put two quantities together? • Why is it important that I can build the number combinations for the number 5? How many ways are there to make 5 using two spins? 3 spins? 4 spins? **Instructional Notes:** • Visual models are cubes and shape pictures. • *Work Place* may not be an independent *Work Place* without further support. • Focus here is on making fives. • Digital display tool link found on the Bridges web site. **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Explored in Dec.-May. • Expected to be secure - Identify shapes regardless of orientation or size is addressed in Sept. and Nov. months. **Writing and Enrichment:** • See *Teacher Masters* (M2 S5 p. T10) of the *Work Place Guides for Differentiation* ideas • See *Work Place Instructions* (p. T11) for game variations. • *Home Connection* p. 21 and *Home Connection* tab p. 149-152.

Module 3- Session 1: Mystery Numbers, Day 1

K.CC.1 **K.CC.3** **K.CC.4c** K.CC.5 K.CC.6 **K.NBT.1**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers from 11 to 19 into a group of 10 and some 1s only in this unit. • Read numbers for 0 to 20 is reinforced from *Units 1, 2, 3, 4, and 7.*	**Guiding Questions:** • What is an efficient way to count an amount greater than ten? • What is a useful strategy for counting teen numbers? How can numbers be represented? ***-continues on next page-***

MP.1 **MP.2**	**Beginning with the Big Idea and key Strategic Behaviors:** • **using the ten-structure** • **composing/decomposing within 20** • counting on **Developing:** • understanding hierarchical inclusion within 20 **Secure:** • understanding cardinality • subitizing • using the five-structure	**Instructional Notes:** • Visual models are double ten-frame five-wise display cards, ten & more numeral display cards, fingers, and written numerals. • Allow students time to be successful in the problem solving. **Number Corner Connections:** • Developing concept/skill - Decompose numbers from 11 to 19 into a group of 10 and some 1s. This concept is featured in all months except Jan. and May. • Expected to be secure - Read numbers for 0 to 20. Covered in all months.
Module 3- Session 2: Mystery Numbers, Day 2		
K.CC.2 **K.CC.3** **K.CC.4c** K.CC.5 K.CC.6 **K.NBT.1** **MP.1** **MP.2**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers from 11 to 19 into a group of 10 and some 1s only in this unit. • Read numbers for 0 to 20 is reinforced from *Units 1, 2, 3, 4, and 7.* **Beginning work with the Big Idea and key Strategic Behaviors:** • **using the ten-structure** • **composing/decomposing within 20** • using counting on **Developing:** • using hierarchical inclusion within 20 **Secure:** • understanding cardinality • subitizing • using the five-structure	**Guiding Questions:** • What is an efficient way to count an amount greater than ten? • What is a useful strategy for counting teen numbers? How can numbers be represented? **Instructional Notes:** • Visual models are double ten-frame five-wise display cards, ten & more numeral display cards, fingers, and written numerals. • Allow students time to be successful in the problem solving. **Number Corner Connections:** • Developing concept/skill - Decompose numbers from 11 to 19 into a group of 10 and some 1s. This concept is featured in all months except Jan and May. • Expected to be secure - Read numbers for 0 to 20. Covered in all months. **Writing and Enrichment:** • *Home Connections* p. 10 and *Home Connection* tab pp. 153-154.
Module 3- Session 3: Introducing Work Place 6D; Roll, Add & Compare		
K.CC.2 K.CC.5 **K.CC.6** **K.OA.2** **K.OA.3** MP.1 **MP.2** **MP.4**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs into more than one way and record is covered in all *Units* except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is covered in *Units 2, 3, 4, 7 & 8.* • Adds with sums to 10 is addressed in Units 4, 7, and 8. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*.	**Guiding Questions:** • How can I use models to represent addition? • Does the order of addends change the sum? • What happens when I join quantities together? **Instructional Notes:** • Visual models are 0-5 number dice, cubes, and equation recording sheets. • Note Math Practices sidebar note p.13 for focus support. **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions • Add with sums to 10. Addressed in months Jan.-May. • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. This appears in Oct., & Dec- May. • Expected to be secure - Read numbers for 0 to 20. Covered in all months. **Writing and Enrichment:** • See *Teacher Masters* (M3 S3 p. T1) of the *Work Place Guides for Differentiation* ideas. ***-continues on next page-***

	• Read numbers for 0 to 20 is reinforced from *Units 1, 2, 3, 4, 7.* **Developing the Big Idea and key Strategic Behaviors:** • counting on • **composing and decomposing within 10** • **counting 3 times when adding** **Secure:** • understanding cardinality • reading numbers to 20 • comparing within 10 (magnitude)	
Module 3- Session 4: A Dime & Some Pennies		
K.CC.1 K.CC.3 **K.NBT. 1** MP.1 MP.2 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs into more is covered in all units except *Unit 4*. • Read numbers for 0 to 20 is reinforced from *Units 1, 2, 3, 4, 7.* **Developing the Big Idea and key Strategic Behaviors:** • counting on • **using the ten-structure** **Secure:** • understanding cardinality • subitizing	**Guiding Questions:** • How can I use models to represent addition? How can I compare one quantity to another? • Does the order of addends change the sum? • What happens when I join quantities together? **Instructional Notes:** • Visual models are dimes and pennies. • Consider spreading this *Session* over two days. • Consider adding this *Session* as an additional *Work Place.* **Number Corner Connections:** • Developing concept/skill - Decompose numbers from 11 to 19 into a group of 10 and some 1s. This concept is featured in all months except Jan. and May. • Expected to be secure - Read numbers for 0 to 20. Covered in all months.
Module 3- Session 5: Tens & Ones Checkpoint		
K.CC.3 K.CC.7 **K.NBT. 1** K.OA.4 MP.1 MP.2 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers from 11 to 19 into a group of 10 and some 1s is only in this *Unit*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. • Read numbers for 0 to 20 and count up to 20 objects to answer "how many?" is reinforced from *Units 1, 2, 3, 4, 7*. **Developing the Big Idea and key Strategic Behaviors:** • counting on • **using the ten-structure**	**Guiding Questions:** • What is an efficient way to count an amount greater than ten? • What is a useful strategy for counting teen numbers? Why is counting important? • How can numbers be represented? **Instructional Note:** • Visual models are dimes and pennies. **Number Corner Connections:** • Developing concept/skill - Decompose numbers from 11 to 19 into a group of 10 and some 1s. This concept is featured in all months except Jan. and May. • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. This reappears in Oct., Dec.., Jan., Feb., Mar., Apr., & May. • Expected to be mastered/secured - Read numbers for 0 to 20. Explored in all months. • Count up to 20 objects to answer how many? Addressed in Feb.-May months. **Writing and Enrichment:** *Home Connections* p. 21 and *Home Connection* tab pp. 155-161. **Child Watching and Assessment:** • ***Optional at this time:*** **Tens & Ones CHECKPOINT –** this is the first complete written assessment of the year; teacher works with whole group (see pp. 20-21 and T5-T6). Also see scoring and reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab pp. 69-70. • Consider using this assessment aa a teacher-led *Work Place* or as an optional/additional *Home Connection.*

Module 4- Session 1: Shake Those Beans Five, Six, and Seven		
K.CC.5 **K.OA.1** K.OA.2 **K.OA.3** MP.1 **MP.2** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs into more than one way and record is reinforced from all *Units* except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is reinforced from *Units 2, 3, 4, 7 & 8*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • counting on • **composing and decomposing within 10** **Secure:** • understanding cardinality • **subitizing** • **using the five-structure** • using hierarchical inclusion • comparing within 10	**Guiding Questions:** • Does the order of addends change the sum? • What happens when I join quantities together? • How can I use models to represent addition? • How many ways are there to make 5, 6, or 7 using two addends? **Instructional Note:** • Visual models are red and white beans, graphs, and written equations. **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Also explored in Dec-May. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May.
Module 4- Session 2: Unifix Trains & Equations Five, Six, and Seven		
K.OA.1 K.OA.2 **K.OA.3** K.OA.5 MP.1 **MP.2** **MP.7**	**Access Prior Learning and Connections to Future Learning**: • Decompose numbers less than or equal to 10 into pairs into more than one way and record is reinforced from all *Units* except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is reinforced from *Units 2, 3, 4, 7 & 8*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • counting on • **composing and decomposing within 10** **Secure:** • understanding cardinality • **subitizing** • **using the five-structure** • using hierarchical inclusion • comparing within 10	**Guiding Questions:** • Does the order of addends change the sum? • What happens when I join quantities together? • How can I use models to represent addition? • How many ways are there to make 5, 6, or 7 using two addends? **Instructional Note:** • Visual models are cubes, graphs, and written equations. **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Explored in Dec-May. • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. It reappears in Oct., & Dec.-May. **Writing and Enrichment:** • Consider using 8, 9, and 10 recording sheets/cubes for students who are secure in using the five-structure. • *Home Connection* p. 13 and *Home Connection* tab pp. 163-167.

Module 4- Session 3: Fill It Up Five +		
K.CC.5 **K.OA.1** **K.OA.2** **K.OA.3** **MP.1** **MP.2** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs into more than one way and record is reinforced from all *Units* except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is reinforced from *Units 2, 3, 4, 7 & 8*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • counting on • **composing and decomposing within 10** **Secure:** • understanding cardinality • **subitizing** • **using the five-structure** • using hierarchical inclusion • comparing within 10	**Guiding Question:** • How can benchmark numbers help me when adding? **Instructional Note:** • Visual models are 0-5 number die, red and white ten-frame display cards, and graphs. **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Explored in Dec.-May. • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May.
Module 4- Session 4: Number Stations, Day 1		
K.CC.5 K.OA.1 K.OA.2 K.OA.3 **MP.1** **MP.2** **MP.4** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs into more than one way and record is reinforced from all *Units* except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is reinforced from *Units 2, 3, 4, 7 & 8*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • counting on • **composing and decomposing within 10** **Secure:** • understanding cardinality • **subitizing** • **using the five-structure** • using hierarchical inclusion	**Guiding Question**: • How can benchmark numbers help me when adding? **Instructional Notes:** • Visual models are 0-5 dice, red and white beans, cubes, and red and white ten-frame display cards. • Consider observing students during *Number Stations* to assess skills and strategies reported on the Kindergarten Progress Report. **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Featured in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Explored in Dec.-May. • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May.

Module 4- Session 5: Number Stations, Day 2		
K.CC.5 K.OA.1 K.OA.2 K.OA.3 MP.1 **MP.2** MP.7	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs into more than one way and record is reinforced from all *Units* except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is reinforced from *Units 2, 3, 4, 7 & 8*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • counting on • **composing and decomposing within 10** **Secure:** • understanding cardinality • **subitizing** • **using the five-structure** • using hierarchical inclusion	**Guiding Question**: • How can I use different combinations of numbers to represent the same quantity? **Instructional Notes:** • Visual models are 0-5 dice, red and white beans, cubes, red and white ten-frame display cards, and written equations. • Consider observing students during *Number Stations* to assess skills and strategies reported on the Kindergarten Progress Report. • Consider using these *Number Stations* as additional *Work Places.* **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Addressed in Dec.-May. • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May. **Writing and Enrichment:** • *Home Connection* p. 23 and *Home Connection* tab p. 169-171.

References

Battista, M. T. (2012). *Cognition-based assessment & teaching of geometric shapes*: B*uilding on students' reasoning.* Portsmouth, NH: Heinemann.

Boaler, J. (2016). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages, and innovative teaching.* San Francisco, CA: Jossey-Bass & Pfeiffer Imprints.

Boaler, J. (n.d.). *Seeing as understanding: The importance of visual mathematics for our brain and learning.* Retrieved March 15, 2019, from https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/Visual-Math-Paper-vF.pdf

Carpenter, T., Fennema, E., Loef Franke, M., Levi, L., Empson, S.B. (2015). *Children's mathematics: Cognitively guided instruction* (2nd ed.). Portsmouth, NH: Heinemann.

Chapin, S. H., & Johnson, A. (2006). *Math matters: Understanding the math you teach, Grades K-8.* Sausalito, CA: Math Solutions Publications.

Council of Chief State School Officers. (2010). The Nevada Academic Content Standards. Retrieved from http://www.doe.nv.gov/uploadedFiles/nde.doe.nv.gov/content/Standards_Instructional_Support/Nevada_Academic_Standards/Math_Documents/mathstandards.pdf.

Common Core Standards Writing Team. (2015, March 6). *Progressions for the Common Core State Standards in Mathematics (draft). Grades K-5, Number and Operations in Base Ten.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Fosnot, C. T., & Dolk, M. (2001). *Young mathematicians at work: constructing number sense, addition, and subtraction*. Portsmouth, N.H.: Heinemann.

Fosnot, C. T., & Dolk, M. (2001). Landscape of learning. Retrieved from: http://www.contextsforlearning.com/samples/k3LandscapeofLearning.pdf

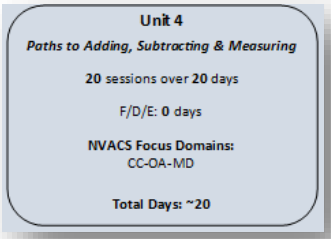
Van de Walle, J.A., Karp, K.S., & Bay-Williams, J.M. (2016). *Elementary and middle school mathematics: Teaching developmentally*. Boston, MA: Pearson.

Van de Walle, J., Karp, K., Lovin, L., & Bay-Williams, J. (2014). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades Pre-K-2* (2nd ed.). Boston, MA: Pearson.

Kindergarten Unit 4: Paths to Adding, Subtracting & Measuring

Big Conceptual Idea: K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking (pp. 1-11), K-5 Progression on Measurement and Data (Measurement Part) (pp. 1-4, 6-7), K-5 Progression on Measurement and Data (Data Part) (pp. 1-5)

***Read the Bridges Unit Overview/Introduction for Unit 4 pp. i-vi. Read each Module Overview for the current week's sessions and the current Session Summary**, along with details for the teaching of each session as you work through Unit 4. These Introduction/Overview/Summary sections provide focus, clarity, vocabulary, definitions, and examples for the "big mathematical ideas and understandings" critical to Kindergarten. This information will support your professional decision-making within the Modules and Sessions as needed.*



Kindergarten Curriculum Pacing Framework: Balanced Calendar

Mathematical Background: Read Bridges *Unit 4 Overview* and *Introduction* (p. i-vi)	**Unit Essential Question for the Teacher:** How will I use the number line, measurement with non-standard units, and money (pennies and nickels) to help my students understand the **relationships** between number, quantities, lengths, and coins to build their flexibility with number understandings and tools?

Instructional note:

Unit 4 gives students opportunity to see and make use of some of the distinct relationships among quantities, lengths, numbers, and coins. **Money** is used in this *Unit* to build security and flexibility within 5 using coins (pennies and nickels) as 1s and 5s to supports the use of 5 as a landmark and a sub-base (e.g. 5 and some more, or 10 is made of two 5s). The **number line** is used initially to model and visually support understanding of the number sequence from 0-10, magnitude, and relationships between numbers (which number is greater than or less than) along a continuum. It also introduces interval counting instead of the discrete counting of objects and use of number lines supports understanding of addition and subtraction, providing opportunity for connecting number words with written numerals. Use of the inequality symbols such as > and < is an extension within the Bridges instructional materials and is not expected within this grade. Understanding the comparison of quantities and the location of a number on the number line connected to greater than and less than are really the focus within kindergarten.

Measurement adds an expanded opportunity for students to recognize the distinctions between discrete and interval counting and between discrete attributes in cardinality (counting 4 apples exactly) compared to continuous attributes involved in measurement (unit measures subdivided into smaller and smaller parts). Kindergarten focuses on the measurement of length as a basic geometric measure (Volume and area are other measures with geometric attributes but are not introduced in kindergarten.). Like with shapes, students learn to conserve the concept of length despite orientation over time. The K-5 Progression on Measurement and Data (Measurement Part - K-5, Geometric Measurement) states, "Geometric measurement connects the two most critical domains of early mathematics, geometry and number, with each providing conceptual support to the other" (p. 2). Students move from recognizing and distinguishing attributes (labeling "big" or "bigger") to becoming increasingly competent at comparing attributes without measurement ("taller than") to measuring and indirectly comparing attributes of objects using numbers.

Other measures, such as weight, capacity, or mass (which have nongeometric attributes) are also briefly introduced in kindergarten, but this is only for exposure. The K-5 Progression on Measurement and Data also confirms the reciprocity between the understanding of measurement and estimation, as well as the crucial understanding of the concept of "unit" as a foundation for higher mathematics. Tools that measure continuous attributes only give approximate measurements. Thus, there is always room for a degree of error in these measurements. This extends student understanding of equality in quantities to equality in comparisons of various measurable attributes, like length.

Unit 4 also provides opportunity for graphing and probability in *Module 4*. The understanding of probability is not a kindergarten expectation and is only meant to be exploratory.

The mathematics content of *Unit 4*:

Children construct understandings in connected and integrated ways, not as isolated, individual pieces. Therefore, continually ask students to explain how they are problem solving ("How did you know?", "What made you think that?", etc.) so you can make explicit the connections students are already making from previous learning, strengthen the synaptic connections being constructed, and encourage the continuance of this sense-making behavior (NVACS, 2010, p. 6).

- Support and instruct to the development of the new **big mathematical ideas** of:
  - **Measurement (with non-standard units)** – measuring with units that vary in length (handspans, feet, craft sticks, etc.) and require repeated iterations.
  - **Units** - refers to the unit being used to measure. For example, handspans, feet, craft sticks, etc.
  - **Number writing** - writing numerals using symbols, e.g. 1,2,3.

- **Addition (+)** - add to or join~~ing~~, putting together, parts and parts.
- **Subtraction (-)** - take from or separate, part of a whole, comparison.
- **Continuous attributes** - geometric and non-geometric attributes (length, volume, area vs. capacity, temperature, weight…)

- Watch for students' attempts at thinking about and using these new **strategic behaviors/strategies** to demonstrate their emerging understandings of the big mathematical ideas:
  - **Comparing**
  - **Estimating**
  - **Predicting**
  - **Graphing**
  - **Using money** (pennies and nickels) as models for 1s and 5s

Over time, with supportive and scaffolded instruction and interactions, students employ more efficient and effective use of strategies. This leads to and confirms deeper and more expanded understandings. Intentionality with the context and range of numbers students work with in mathematics supports this number sense development.

On-going enrichment:

- Continue noting the ***Skills Across the Grade Level*** chart in the *Introduction* section (*Unit 4*, p. iv). K.CC.1, K.CC.2, K.CC.4a & b, K.CC.5, K.MD.1, and K.MD.2 are standard expectations benchmarked to be secure by the end of this *Unit*. This includes counting to 20, counting forward from a number other than 1, and flexibly counting, tagging, and holding quantity (cardinality) for numbers up to 20. Also secure by the end of the *Unit* are K.MD.1 and K.MD.2 dealing with measuring and comparing lengths. Writing numerals, comparing written numerals, K.OA standards, and classifying objects are expectations still being introduced or developed throughout this *Unit* (See p. iv.). This is important information for those day-to-day instructional decisions you make within each *Session* as to what discussions or activities to extend, cut short, emphasize, skip, etc.
- Expect all students to engage in the mathematics.

Essential Academic Vocabulary Use these words consistently during instruction.	
Essential Academic Vocabulary: (first time explicitly taught) *indicates *Word Resource Cards* are available in the materials	**Review Academic Vocabulary:** (Vocabulary explicitly taught in previous *Units*, or *Number Corner*)
length* after*/before* count on* count back* sum or total* ones* tens* long/longer/lonest* short/shorter/shortest* the same cent* nickel* penny*	*half** *less than** *greater than** *add** *addition* *equation** *between** *subtract** *subtraction* *equal** *longer than/shorter than* *compare** *less*/more**

Additional terminology that students may need support with: *backward/forward,* measure*,* middle, *left/right*, *order*, *strategies*, minus*, plus, next to*, *graph*, *in all*.

Standards listed in **bold** indicate a focus of the lesson.

NVACS (Content and Practices)	Mathematical Development of the Big Idea	Instructional Clarifications & Considerations
Module 1- Session 1: Building a Number Line		
K.CC.1 **K.CC.2** K.MD.1 MP.1 MP.2 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Counting forward and backward from a given number is revisited in *Unit 5*. • Compare two numbers from 1 to 10 presented as written numerals reappears in *Units 5 & 6*. • In future grades students will draw on the number line to explore whole numbers, fractions and decimals. **Beginning with the Big Idea and key Strategic Behaviors:** • Predicting **Developing:** • understanding hierarchical inclusion • using 1-to-1 correspondence • **counting forwards and backwards** • **recognizing 0-9 sequence**	**Guiding Questions:** • How can I use a number line to compare numbers? • What do you notice about the size of the number and its location on the number line? **Instructional Notes:** • Visual models are a created number line, student steps, and numerals. • Interval counting is reinforced in this *Session*, in which students count the number of equal size intervals between two points. • Note the sidebar note on p. 5 to support K.MP.7. **Number Corner Connections:** • Counting forward and backward from any number in the range of 10 to 1 is expected to be secure. It continues in all months on *Number Corner*. • Compare two numbers from 1 to 10 presented as written numerals is a developing concept. It reappears in Jan., Mar., Apr., and May.
Module 1- Session 2: X-Ray Vision		
K.CC.1 **K.CC.2** **K.CC.4** MP.1 MP.2 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Number order from 0 to 10 was previously covered in *Unit 3*. • Read numbers from 0 to 20 was covered in *Units 1-3*. • Consider providing additional support through materials in *Bridges Intervention Set 1, Volume 1* (online). **Beginning with the Big Idea and key Strategic Behaviors:** • using number relationships of *before* and *after* • **interval counting** **Developing:** • using hierarchical inclusion • 1-to-1 correspondence	**Guiding Questions**: • Where does the number 5 go on our number line? How do you know? What words can we use to explain where on the number line a number goes? (before, after)? • If all of the numbers on the number line are mixed up, how can they be put back in the correct order? **Instructional Notes:** • Visual models are a created number line, the numerals to ten display cards, and a drawn number line on the board. • Students are also problem solving *before* and *after.* • Consider focusing on student math strategies (using landmark numbers, number sequence, using 1 more/1 less, counting, interval counting, etc.) to determine hidden numbers on the number line, substituting the idea of X-ray vision. **Number Corner Connections:** • Order numerals from 0 to 10 is expected to be secure. This was explored in Dec. • Read numbers from 0 to 20 is expected to be secure. This is included in all months. **Writing and Enrichment:** • *Home Connection* p. 12 and *Home Connection* tab pp. 77-80.
Module 1- Session 3: Introducing Work Place 4A Scrambled Numbers One to Ten		
K.CC.1 **K.CC.2** K.CC.3 **K.CC.4** K.CC.5 MP.1 **MP.2** MP.7	**Access Prior Learning and Connections to Future Learning:** • Number order from 0 to 10 was previously covered in *Unit 3*. **Beginning with the Big Idea and key Strategic Behaviors:** • Understanding hierarchical inclusion • Using 1-to-1 correspondence	**Guiding Questions:** • If all of the numbers on the number line are scrambled, how can the class put them in the correct order? What words can we use to describe the relationships among numbers? (before, after) **Instructional Notes:** • Visual models are the deck of number cards 0-10, and number line. • Digital display tool link (see p. 2) found on the Bridges web site. • Encourage students to use resources in the *Number Corner*, including the number line for this task. ***-continues on next page-***

	• counting forwards and backwards • **recognizing 1-9 sequence**	• Rather than sitting in a circle, consider having all students sitting on one side of the number cards so all students see the numbers and number sequence in the correct orientation. • During partner work, consider having students sit side by side so both students see the numbers and number sequence in the correct orientation. **Number Corner Connections:** • Order numerals from 0 to 10 is expected to be secure at this time. This is explored in Dec. • Read numbers from 0 to 20 is expected to be secure. This is explored in all months. **Writing and Enrichment:** • See *Teacher Masters* (p. T1) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (p. T2) for game variations. • Optional *Work Place Log* (p. T3).
Module 1- Session 4: Read My Mind, Part 1		
K.CC.3 K.CC.4 K.CC.5 **K.CC.7** MP.1 **MP.2** MP.7	**Access Prior Learning and Connections to Future Learning:** • Compare two numbers from 1 to 10 presented as written numerals reappears in *Units 5 & 6.* **Beginning with the Big Idea and key Strategic Behaviors:** • understanding hierarchical inclusion • **recognizing magnitude** • **recognizing 1-9 sequence** • writing numbers	**Guiding Questions:** • How can words be used to compare numbers? • How do the terms greater than or less than help you determine the number in my mind? **Instructional Note:** • Visual models are a deck of number cards 0-10 (used for the CHECKPOINT and as a student scaffold if needed). **Literature Connection:** • *More or Less* by Stuart J Murphy **Number Corner Connections:** • Compare two numbers from 1 to 10 presented as written numerals is a developing concept. It reappears in Jan., Mar., Apr., and May. **Child Watching and Assessment:** • **Numeral Order CHECKPOINT** – done individually (see p. 19 and T4). Also see reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab p. 39.
Module 1- Session 5: Read My Mind, Part 2		
K.CC.3 K.CC.4 K.CC.5 **K.CC.7** MP.1 **MP.2** MP.	**Access Prior Learning and Connections to Future Learning:** • Compare two numbers from 1 to 10 presented as written numerals reappears in *Units 5 & 6.* • Compare numbers from 0-20 and compare two-digit numbers are both covered in Grade 1. **Beginning with the Big Idea and key Strategic Behaviors:** • understanding hierarchical inclusion • **recognizing magnitude** • **identifying 1-9 sequence** • number writing	**Guiding Questions**: • How can words be used to compare numbers? • How do the terms greater than or less than help you determine the number in my mind? **Instructional Notes:** • Visual model is the deck of number cards 0-20 (if appropriate). • *Scrambled Numbers One to Ten* has a variety of differentiation options in *Unit 4* binder p. T1. Once students have mastered ordering and saying the number sequence from 1-10, consider introducing a die to provide opportunities to count starting from a number other than 0 or 1. **Literature Connection:** • *Hopping on the Number Line* by Nancy Allen **Number Corner Connections:** • Compare two numbers from 1 to 10 presented as written numerals is a developing concept. It reappears in Jan, Mar, Apr, and May. Compare two-digit numbers is an introductory concept and covered in Grade 1. **Writing and Enrichment:** • Note the CHALLENGE idea (p. 22) provided in *Problems & Investigations*. • *Home Connection* p. 23 and *Home Connection* tab pp. 81-82.
Module 2- Session 1: Foxes & Dens		
K.CC.2 K.CC.4 K.CC.5 **K.OA.1** K.OA.2 **MP.1** **MP.6**	**Access Prior Learning and Connections to Future Learning:** • Represent addition with objects, fingers, verbal explanations, expressions and equations is revisited in *Units 2, 4, 6, 7*, and *8.* • Keep in mind that being able to count forward, beginning from a given number is a prerequisite	**Guiding Questions**: • How can I find the total when I put two quantities together? • What is a strategy? • What strategy can I use to find the total? **Instructional Notes:** • Visual models are dot die, numeral die, dominoes game board, and fingers. ***-continues on next page-***

MP.7	for counting on. Understanding that each successive number name refers to a quantity that is one greater is the conceptual beginning for Grade 1 counting on. • Through the *Bicycle Race Work Place*, some students may have foundations for counting on (e.g. roll 3, put 3 in my head and 4, 5, 6. The total is 6.) **Beginning with the Big Idea and key Strategic Behaviors:** • recognizing equivalence • **counting on** **Developing:** • using 1-to-1 correspondence • understanding cardinality • composing/decomposing	• The counting on strategy is emphasized in this game. However, counting on as a strategy is not a kindergarten standard. It is a grade 1 standard: 1.OA.C.6. Counting on is considered an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added and addends become embedded within the total (OA Progressions, p. 5). • Consider using two dot dice verses one dot die and one numeral die if needed to support student development. • "Note on vocabulary: The term "total" is used here instead of the term "sum." "Sum" sounds the same as "some," but has the opposite meaning. "Some" is used to describe problem situations with one or both addends unknown, so it is better in the earlier grades to use "total" rather than "sum."" (OA Progressions, p. 8). • Digital display tool link on the Bridges web site. **Literature Connections:** • *Animals in Winter* by Henrietta Bancroft & Richard G Van Gelder - builds background knowledge of foxes and dens. • *City Foxes* by Wendy Shattil - builds background knowledge of foxes and dens in an urban context. **Number Corner Connections:** • Dec. – May *Number Corner* months revisit representing addition in various ways. **Writing and Enrichment:** • See *Bridges Educator Site*, Resources tab, *Unit 4 M2* for additional resources for this *Module*.
Module 2- Session 2: Introducing Work Place 4B Foxes & Dens		
K.CC.2 K.CC.4 K.CC.5 **K.OA.1** K.OA.2 **MP.1** **MP.6** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • See previous *Session.* **Beginning with the Big Idea and key Strategic Behaviors:** • recognizing equivalence • **counting on** **Developing:** • using 1-to-1 correspondence • understanding cardinality • composing/decomposing	**Guiding Questions**: • How can I find the total when I put two quantities together? • What is a strategy? What strategy can I use to find the total? **Instructional Notes:** • Visual models are the five-frame, cubes, and fingers. • The counting on strategy is emphasized in this game. However, counting on as a strategy is not a kindergarten standard. It is a grade 1 standard: 1.OA.C.6. Counting on is considered an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added and addends become embedded within the total (OA Progressions, p. 5). • Consider using two dot dice verses one dot die and one numeral die if needed to support student development. **Literature Connections:** • *Animals in Winter* by Henrietta Bancroft & Richard G Van Gelder - builds background knowledge of foxes and dens. • *City Foxes* by Wendy Shattil - builds background knowledge of foxes and dens in an urban context. **Writing and Enrichment:** • See *Teacher Masters* (M2 S2 p. T11) of the *Work Place Guides for Differentiation* ideas. • See *Work Place* Instructions (p. T2) for game variations. • *Home Connections* p. 8 and *Home Connection* tab pp. 83-84.
Module 2- Session 3: The Forest Game		
K.CC.2 K.CC.4 K.CC.5 K.OA.1 **K.OA.2** **MP.1** **MP.6** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Represent addition and subtraction with objects, fingers, verbal explanations, expressions and equations is revisited in *Units 7* and *8*. **Beginning with the Big Idea and key Strategic Behaviors:** • recognizing equivalence **Developing:** • **composing/decomposing**	**Guiding Questions**: • How can I represent addition and subtraction problems? • How can I find what is left over when I take one quantity away from another? • How can I find the total when I put two quantities together? • What happens to the amount every time I add one? (The result is the next number in the counting sequence) • What happens to the amount every time I subtract one? (The result is the previous number in the counting sequence). **Instructional Notes:** • There are limited visual models. Some students may need additional manipulatives. • The *Forest Game* has a very weak connection to solving addition and subtraction story problems (K.OA.2). Besides the game using a forest/squirrel premise, students focus more on the + or – symbols and numerals when playing the game. There isn't a "story" being told or problem context with action. ***-continues on next page-***

		• This will become a *Home Connection* in *Session 5.* Consider adding this game as an additional work place before it is sent home. • Digital Display tool link on the Bridges web site. **Literature Connection:** • *Scaredy Squirrel* by Melanie Watts (Use this literature link to build an engaging context. Book summary: From his home in the nut tree, Scaredy Squirrel is equipped for any sort of disaster or emergency, and rather than adventuring outside of his tree to experience the world, Scaredy Squirrel stays home to watch for danger day after day. The squirrels in *The Forest Game* hop in and out of the forest to get nuts and seeds.) **Number Corner Connections:** • Represent addition and subtraction with objects, fingers, verbal explanations, expressions and equations is a developing concept. Dec. – May *Number Corner* months revisit representing addition subtraction in various ways. **Writing and Enrichment:** • Students can write an addition or subtraction number story based on the forest context. Example: In the morning 8 squirrels were in the forest. In the afternoon, 2 more squirrels came to the forest. How many squirrels are in the forest now? • Provide students with opportunities to act out the forest context with other students during Dramatic Play. Squirrel cut outs on sticks or felt squirrels on flannel board work well. Have students act out and retell the different number combinations in the game. • Scoring and Reteaching suggestions aligned with the Checkpoint assessment can be found in the *Assessment Guide*, Bridges Unit Assessment tab, pp.41-42. **Child Watching and Assessment:** • **Foxes & Dens CHECKPOINT** – observe students at a time playing the game (see p. 12 and T4). Also see scoring and reteaching suggestion in the Assessment Binder, Bridges Unit Assessments tab pp. 41-42.
Module 2- Session 4: Beat You to Twenty		
K.CC.2 K.CC.4 **K.CC.5** K.OA.1 K.OA.2 MP.1 **MP.6** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Count up 20 objects arranged in line, rectangular array or circle to answer how many is addressed again in *Units 6 & 7*. • Decompose numbers less than or equal to 10 into pairs in more than one way is addressed in all *Units*. **Beginning with the Big Idea and key Strategic Behaviors:** • counting on **Developing:** • **using the five-structure** • using the ten-structure • understanding hierarchical inclusion to 20 **Secure:** • understanding 1-to-1 correspondence • counting forwards	**Guiding Questions**: • How can benchmark numbers help me when adding? • Why is grouping the cubes into towers of 10 helpful? Find out who is ahead, by how much, what number to hope to roll. **Instructional Notes:** • Visual models are cubes and written numerals. • The counting on strategy is emphasized in this game through teacher notes. However, counting on as a strategy is not a kindergarten standard. It is a grade 1 standard: 1.OA.6. Counting on is considered an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added, and the addends become embedded within the total (OA Progressions, p. 5). **Number Corner Connections:** • Expected to be secure - count up 20 objects arranged in line, rectangular array or circle to answer how many. Addressed in Feb., Mar. and April. • Developing - decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. Months Oct.-May cover this concept.
Module 2- Session 5: Introducing Work Place 4C Beat You to Twenty		
K.CC.2 K.CC.4 **K.CC.5** K.OA.1 K.OA.2	**Access Prior Learning and Connections to Future Learning:** **Beginning with the Big Idea and key Strategic Behaviors:** • counting on **Developing:** • **using the five-structure**	**Guiding Questions:** • How can benchmark numbers help me when adding? • Why is grouping the cubes into towers of 10 helpful? Find out who is ahead, by how much, what number to hope to roll. **Instructional Notes:** • Visual models are cubes and the game board with written numerals. • Digital display tool link on the Bridges web site. ***-continues on next page-***

MP.1 **MP.6** **MP.7**	• using the ten-structure • understanding hierarchical inclusion to 20 **Secure:** • using 1-to-1 correspondence • counting forward	**Number Corner Connections:** • Counting backwards from any number in the range of 10 to 1 is an introductory skill. It continues in all months during *Number Corner*. • Dec. – May *Number Corner* months revisit representing subtraction in various ways. **Child Watching and Assessment:** • See *Teacher Masters* (M2 S5 p. T5) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (T6) for game variations. • *Home Connection* p. 19 and *Home Connection* tab pp. 85-89.
Module 3- Session 1: Longer, Shorter, or the Same?		
K.CC.1 K.CC.2 K.CC.6 K.MD.1 **K.MD.2** **MP.1** **MP.6**	**Access Prior Learning and Connections to Future Learning:** • Describe measureable attributes of objects, such as length or weight and describe several measurable attributes of a single object are covered in *Unit 8* also. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference are also covered in *Unit 8*. • Compare two numbers from 1 to 10 presented as written numerals reappears in *Units 5 & 6*. **Beginning with the Big Idea and key Strategic Behaviors:** • writing > and < equations **Developing:** • **measuring length with non-standard measures** • comparing • recognizing magnitude	**Guiding Questions:** • How do we know whether one object is longer or shorter than another? • Why do we need to use identical measurement units to get accurate results? • Why does one unit of measure give a different result than another? • What attributes of an object can be measured? • What does it mean to measure something? Does how I measure matter? • How can I compare 2 or 3 objects by their size? • How do you know which is longer? Shorter? Same? **Instructional Notes:** • Visual models are ribbons, cubes, and < > symbols. • Students problem solve *longer, shorter*, and *the same.* • Note time and materials needed for preparation for this Session. **Number Corner Connections:** • Expected to be secure - Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object. Topic is explored in Nov. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. This topic is addressed in Nov. **Writing and Enrichment:** • Investigation: Measure the height of 3 classmates using a non-standard unit (e.g. dominoes, playing cards, paper clips, etc.). Have each person lie down and measure the from head to toe. Show what you used as your measuring unit and how many you used to measure each person. Draw a picture of your group from shortest to tallest. Use math vocabulary to write about what you learned (shortest, tallest, taller than, shorter than).
Module 3- Session 2: How Long?		
K.CC.1 K.CC.2 K.CC.6 K.MD.1 **K.MD.2** **MP.1** **MP.6**	**Access Prior Learning and Connections to Future Learning:** • Describe measurable attributes of objects, such as length or weight, describe several measurable attributes of a single object are covered in *Unit 8*. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference are also covered in *Unit 8*. **Beginning with the Big Idea and key Strategic Behaviors:** • **measuring length with non-standard measures** • comparing length • recognizing magnitude	**Guiding Questions:** • What attributes of an object can be measured? • What does it mean to measure something? Does how I measure matter? • How can I compare 2 or 3 objects by their size? • How do you know which is longer? Shorter? Same? **Instructional Notes:** • Visual models are an object, cut strings, and cubes. • Students problem solve *longer than*, *shorter than*, and *the same as.* **Number Corner Connections:** • Expected to be secure - Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object. This topic is explored in Nov. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. This is explored in Nov. • Developing - Compare two numbers from 1 to 10 presented as written numerals. It reappears in Jan., Mar., Apr., and May. **Writing and Enrichment:** • How tall is your toy investigation: Measure your favorite stuffed toy, teddy bear or doll using non-standard units (e.g. paper clips, coins, dominoes, or anything else you have that you lay end to end). ***-continues on next page-***

		• Choose a non-standard unit that you will use to measure how tall your toy is. Measure your toy lengthwise (e.g. head to toe). Repeat with a different non-standard unit. Was your measurement the same or different from the first unit you used? • *Home Connection* p. 12 and *Home Connection* tab pp. 91-92.
Module 3- Session 3: Animal Paths		
K.CC.2 K.CC.4 K.CC.6 K.MD.1 **K.MD.2** MP.1 **MP.5** **MP.6** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Expected to be mastered: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. *Unit 8* covers this concept also. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *Unit 8* covers this concept also. **Beginning with the Big Idea and key Strategic Behaviors:** • **measuring length with non-standard measures** • **comparing length** • recognizing magnitude	**Guiding Questions:** • How can I compare 2 or 3 objects by their size? • How do you know which is longer? Shorter? Same? **Instructional Notes:** • Visual models are heel-to-toe steps, taped paths, and cubes. • If appropriate, use animals that are more familiar to your class. **Number Corner Connections:** • Expected to be secure - Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object. This is explored in Nov. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. This is a focus in Nov. **Child Watching and Assessment:** • **Counting & Writing Numbers CHECKPOINT** – work with students individually (see p.15 and T1). Also see scoring and reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab pp. 44-45.
Module 3- Session 4: Compare, Spin & Win		
K.CC.2 K.CC.4 K.CC.6 K.MD.1 **K.MD.2** MP.1 **MP.6** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Describe measurable attributes of objects, such as length or weight, describe several measurable attributes of a single object are covered in *Unit 8*. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference are covered again in *Unit 8*. • Compare two numbers from 1-10 presented as written numerals reappear in *Units 5 & 6*. **Beginning with the Big Idea and key Strategic Behaviors:** • **measuring length with non-standard measures** • comparing length • recognizing magnitude	**Guiding Questions:** • Does how I measure matter? • How can I compare 2 or 3 objects by their size? How do you know which is longer? Shorter? Same? **Instructional Notes:** • Visual models are craft sticks. • Note objects needed for this Session. • Digital display tool link on the Bridges web site. **Number Corner Connections:** • Expected to be secure - Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object. Topic is explored in Nov. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. This is featured in Nov. • Developing - Compare two numbers from 1 to 10 presented as written numerals. It reappears in Jan., Mar., Apr., and May. **Writing and Enrichment:** • Refer to the *Word Resource Cards* to support the use of vocabulary.
Module 3- Session 5: How Many Cubes? How Many Sticks?		
K.CC.2 K.CC.4 K.CC.6 K.MD.1 **K.MD.2**	**Access Prior Learning and Connections to Future Learning:** • Describe measurable attributes of objects, such as length or weight, describe several measurable attributes of a single object are covered in *Unit 8*.	**Guiding Questions:** • How do you know which is longer? Shorter? Same? • Why does it take fewer sticks than cubes to measure these items? • What is the difference in measurement when using large units and small units? **Instructional Notes:** • Visual models are craft sticks and cubes. ***-continues on next page-***

MP.1 **MP.6** **MP.7**	• Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference are covered in *Unit 8*. **Beginning with the Big Idea and key Strategic Behaviors:** • **estimating** **Developing:** • **measuring length with non-standard measures** • comparing length • recognizing magnitude	• Clarification on p. 22 *Problems & Investigations* – in Step 7 the image is not what is intended. Change the word "whiteboard" to "table" so students are measuring the same object with different units. • Digital display tool link on the Bridges web site. **Literature Connection:** • *Measuring Penny* by Loreen Leedy **Number Corner Connections:** • Expected to be secure - Describe measureable attributes of objects, such as length or weight. Describe several measureable attributes of a single object. This is included in Nov. • Directly compare two objects with a measureable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. This topic is included in Nov. **Writing and Enrichment:** • In journals or on paper have students respond to, "Why does it take few sticks than cubes to measure these items?" • *Home Connections* p. 23 and *Home Connection* tab pp. 93-94 (may need some introduction before being sent home).
Module 4- Session 1: Which Coin Will Win?		
K.CC.5 K.CC.6 K.OA.3 **K.MD.3** MP.1 **MP.7** MP.8	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs in more than one way is covered in all *Units*. • Classify objects into categories and count the number of objects in different categories is covered in *Units 1, 5, & 7*. **Beginning with the Big Idea and key Strategic Behaviors:** • using the five-structure • counting on • recognizing coins by name • **categorizing & comparing**	**Guiding Questions:** • What is a number relationship? How can they help me? • Why is it important that I can build the number combinations for the number 5? 10? **Instructional Notes:** • Visual models are coins. Consider having available actual coins that students can manipulate. • Student will identify nickels and pennies; however, the value of the coins is the focus for this session as ones and fives. • The five-structure is reinforced by use of the graph. The graph also emphasizes practice with counting "5 and some more" and the idea that 10 is composed of two sets of 5. • Graphing and probability is covered in this activity but is not the main focus of the lesson. • Digital display tool link on the Bridges web site. **Literature Connection:** • *Hunter's Money Jar* by Charlotte Guillain **Number Corner Connections:** • Decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. Months Oct.-May explore this concept. • Classify objects into categories and count the number of objects in different categories is a developing concept. This is included in Oct., Dec., Mar., Apr. & May.
Module 4- Session 2: Introducing Work Place 4D Which Coin Will Win?		
K.CC.5 K.CC.6 K.OA.3 **K.MD.3** MP.1 **MP.7** MP.8	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. All *Units* cover this concept. • Classify objects into categories and count the number of objects in different categories is a developing concept. It is covered in *Units 1, 5, & 7*. **Beginning with the Big Idea and key Strategic Behaviors:** • using the five-structure • counting on • recognizing coins by name • **categorizing & comparing**	**Guiding Questions:** • What is a number relationship? How can they help me? • Why is it important that I can build the number combinations for the number 5? 10? **Instructional Notes:** • Consider having available actual coins that students can manipulate. • This activity emphasizes practice with counting "5 and some more" and the idea that 10 is composed of two sets of 5. • Graphing and probability are covered in this activity but is not the main focus of the session and *Work Place*. **Literature Connection:** • *The Penny Pot* by Stuart J Murphy **Number Corner Connections:** • Decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. Months Oct.-May explore this concept. • Classify objects into categories and count the number of objects in different categories is a developing concept. See the following months: Oct., Dec., Mar., Apr. & May. **Writing and Enrichment:** • See *Teacher Masters* (M4 S2 p. T2) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (p. T3) for game variations. • *Home Connection* p. 9 and *Home Connection* tab pp. 95-96.

Module 4- Session 3: Money March		
K.CC.5 K.CC.6 **K.OA.3** MP.1 **MP.7** MP.8	**Access Prior Learning and Connections to Future Learning:** • Count up 20 objects arranged in line, rectangular array or circle to answer how many is addressed again in *Units 6 & 7*. • Decompose numbers less than or equal to 10 into pairs in more than one way is covered in all *Units*. **Beginning with the Big Idea and key Strategic Behaviors:** • **using the five-structure** • counting on • recognizing coins by name and value • **composing**	**Guiding Questions**: • Why is it important that I can build the number combinations for the number 5? 10? • How can I use different combinations of numbers to represent the same quantity? **Instructional Notes:** • Visual models are coins. • Consider having available actual coins that students can manipulate. • Students will problem solve with pennies and nickels. • The counting on strategy is emphasized in this game through teacher notes. However, counting on as a strategy is not a kindergarten standard. It is a grade 1 standard: 1.OA.C.6. Counting on is considered an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added and addends become embedded within the total (OA Progressions, p. 5). • Digital display tool link on the Bridges web site. **Literature Connection:** • *Benny's Pennies* by Pat Brisson **Number Corner Connections:** • Expected to be secure - count up 20 objects arranged in line, rectangular array or circle to answer how many. This is addressed in February, March and April. • Developing - decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. Months Oct.-May include this concept.
Module 4- Session 4: Money March Partner Game		
K.CC.5 K.CC.6 **K.OA.3** MP.1 **MP.7** MP.8	**Access Prior Learning and Connections to Future Learning:** • Count up 20 objects arranged in line, rectangular array or circle to answer how many is addressed again in *Units 6 & 7*. • Decompose numbers less than or equal to 10 into pairs in more than one way is covered in all *Units*. **Beginning with the Big Idea and key Strategic Behaviors:** • **using the five-structure** • counting on • **recognizing coins by name and value**	**Guiding Questions**: • Why is it important that I can build the number combinations for the number 5? 10? • How can I use different combinations of numbers to represent the same quantity? **Instructional Notes:** • Visual models are game spinners and game board. • Consider having available actual coins that students can manipulate. • The counting on strategy is emphasized in this game through teacher notes. However, counting on as a strategy is not a kindergarten standard. It is a grade 1 standard: 1.OA.C.6. Counting on is considered an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added and addends become embedded within the total (OA Progressions, p. 5). • Consider playing this game during your small group instruction or as an additional *Work Place*, so you can provide prompting to count coin combinations. **Literature Connection:** • *Bunny Money* by Rosemary Wells **Number Corner Connections:** • Expected to be secure - count up 20 objects arranged in line, rectangular array or circle to answer how many. Addressed in Feb., Mar. and April. • Developing - decompose numbers less than or equal to 10 into pairs in more than one way is a developing concept. Months Oct.-May address this concept. **Child Watching and Assessment:** • **Money March Partner Game CHECKPOINT** – watch small groups during the game (see p. 16 and T7). Also see the reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab p. 47.
Module 4- Session 5: Introducing Work Place 4E Race You to 15 cents		
K.CC.2 K.OA.1 K.MD.3 MP.1 **MP.7** MP.8	**Access Prior Learning and Connections to Future Learning:** • Fluently add and subtract within 5 is covered in all *Units*. **Beginning with the Big Idea and key Strategic Behaviors:** • **using fluency** **Developing:** • **using the five-structure**	**Guiding Questions:** • Why is it important that I can build the number combinations for the number 5? 10? • How can I use different combinations of numbers to represent the same quantity? **Instructional Notes:** • Visual models are coins. ***-continues on next page-***

	• **composing** • counting on • **naming coins and values**	• The counting on strategy is emphasized in this game through teacher notes. However, counting on as a strategy is not a kindergarten standard. It is a grade 1 standard: 1.OA.C.6. Counting on is considered an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added and addends become embedded within the total (OA Progressions, p. 5). • *Race You to 15 Cents* might not be an independent *Work Place* yet. Consider playing this game during your small group instruction instead so that you can provide prompting to trade 5 pennies for a nickel. Trading and grouping is an important concept for place value foundations. Consider providing teacher support to explore this concept. Make explicit how amounts greater than 5 can be seen as a group of 5 and some more ones. Discuss with students how some coins are worth more than others (e.g. Some students look at two nickels and one penny and conclude the total is 3, while others report that the total is 11 cents.). • Digital display tool link Bridges web site. **Literature Connection:** • *Lemonade in Winter* by Emily Jenkins **Number Corner Connections:** • Fluently add and subtract within 5 is an introductory concept. Months Oct.-May help develop this concept. **Writing and Enrichment:** • See *Teacher Masters* (p. T8) of the *Work Place Guides for Differentiation* ideas • *Home Connection* p. 20 and *Home Connection* tab pp. 97-98.

References

Battista, M. T. (2012). *Cognition-based assessment & teaching of addition and subtraction: Building on students' reasoning.* Portsmouth, NH: Heinemann.

Boaler, J. (2016). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages, and innovative teaching.* San Francisco, CA: Jossey-Bass & Pfeiffer Imprints.

Boaler, J. (n.d.). *Seeing as understanding: The importance of visual mathematics for our brain and learning.* Retrieved March 15, 2019, from https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/Visual-Math-Paper-vF.pdf

Carpenter, T., Fennema, E., Loef Franke, M., Levi, L., Empson, S.B. (2015). *Children's mathematics: Cognitively guided instruction* (2nd ed.). Portsmouth, NH: Heinemann.

Chapin, S. H., & Johnson, A. (2006). *Math matters: Understanding the math you teach, Grades K-8.* Sausalito, CA: Math Solutions Publications.

Common Core Standards Writing Team. (2011, May 29). *Progressions for the Common Core State Standards in Mathematics (draft). K, Counting and Cardinality; Grades K-5, Operations and Algebraic Thinking.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Common Core State Standards Writing Team. (2015, March 6). *Progressions for the Common Core State Standards in Mathematics (draft). K-3, Categorical Data; Grades 2-5, Measurement Data.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Council of Chief State School Officers. (2010). The Nevada Academic Content Standards. Retrieved from http://www.doe.nv.gov/uploadedFiles/nde.doe.nv.gov/content/Standards_Instructional_Support/Nevada_Academic_Standards/Math_Documents/mathstandards.pdf.

Fosnot, C. T., & Dolk, M. (2001). *Young mathematicians at work: constructing number sense, addition, and subtraction*. Portsmouth, N.H.: Heinemann.

Fosnot, C. T., & Dolk, M. (2001). Landscape of learning. Retrieved from: http://www.contextsforlearning.com/samples/k3LandscapeofLearning.pdf

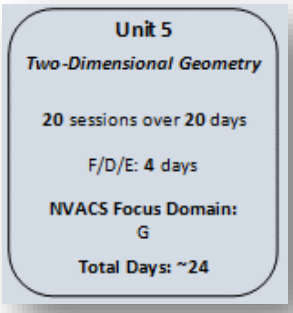
National Council of Teachers of Mathematics (NCTM). (2014). Procedural fluency in mathematics: A position of the National Council of Teachers of Mathematics. Retrieved from *www.nctm.org*.

Van de Walle, J.A., Karp, K.S., & Bay-Williams, J.M. (2016). *Elementary and middle school mathematics: Teaching developmentally*. Boston, MA: Pearson.

Van de Walle, J., Karp, K., Lovin, L., & Bay-Williams, J. (2014). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades Pre-K-2* (2nd ed.). Boston, MA: Pearson.

Kindergarten Unit 5: Two-Dimensional Geometry

Big Conceptual Idea: K-6 Progression on Geometry (pp. 1-7)



Kindergarten Curriculum Pacing Framework: Balanced Calendar

***Read the Bridges Unit Overview/Introduction for Unit 5 pp. i-vi. Also read each Module Overview for the current week's sessions and the current Session Summary**, along with details for the teaching of each session, as you work through Unit 5. These Introduction/Overview/Summary sections provide focus, clarity, vocabulary, definitions, and examples for the "big mathematical ideas and understandings" critical to Kindergarten. This information will support your professional decision-making within the Modules and Sessions as needed.*

Mathematical Background: Read Bridges *Unit 5 Overview* and *Introduction* (pp. i-vi)	**Unit Essential Question for the Teacher:** How do I help my students flexibly recognize, name, describe, sort, compare, compose, decompose, and construct two-dimensional shapes observed in their environment, using precise attributes regardless of size or orientation?

Instructional note:

Unit 5 focuses heavily on geometry, although K.CC, K.OA, and K.MD Standards continue to be developed. **Geometry**, as identified by the NVACS, **is one of the critical content areas for kindergarten**. The Standards expectations summarized in the NVACS document on p. 9 state,

> *"(2) Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes" (NVACS, 2010).*

In kindergarten, students work systematically, deeply, and extensively to build mental visualization of geometric concepts and spatial relations. It is beneficial to keep this in mind when working through the Bridges instructional materials, especially for *Unit 5* and the first two *Modules* of *Unit 6*. Position words such as above, below, next to, behind, in front of, and beside are also introduced and used in *Number Corner* (December *Calendar Grid*).

The focus for kindergarten is **spatial structuring** and **spatial relations**, including the **composing and decomposing of shapes**. **This work becomes the foundation for all further work involving spatial structuring in higher mathematics** (multiplication, area, volume…) and lays foundations for work in the physical sciences, engineering, and the arts (K-6 Progression on Geometry, pp. 2, 4). Therefore, it is important to vary in many ways the examples and models used so students build flexible understandings of geometric concepts and do not learn these in limited ways. WCSD has available an additional set of shape cards, which provide various orientations and sizes to support the development of this flexible understanding of shape, orientation and relative position. These can be found in the Kindergarten Teacher Community on Microsoft Teams. Click on Kinder Files within the General Channel; then scroll down to the folder labeled Bridges.

Two-dimensional shapes are defined by NVACS as shapes lying in a plane or "flat". These shapes have only the dimensions of length and width. Three-dimensional shapes are defined as "solid". These shapes have the dimensions of length, width, and height, as they have thickness or "stackability". "Lying in a plane" is our more precise understanding of two-dimensional, although with emergent learners we support their emerging cognitive understandings of more general differences, encouraging growth to more precise understandings over time. Consider carefully, however, the materials and vocabulary presented as to not create confusion for our students. Throughout this *Unit*, there are a number of suggestions, clarifications, and supports provided in the following pages of *Session* Instructional Notes to inform work in geometry with students. Also, consider referencing the K-6 Progression on Geometry (referenced above) if further explanations or examples are needed regarding what students should know and be able to do within geometry by the end of *Units 5* and *6*.

The mathematics content of *Unit 5*:

Children construct understandings in connected and integrated ways, not as isolated, individual pieces. Therefore, continually ask students to explain how they are problem solving ("How did you know?", "What made you think that?", etc.) so you can make explicit the connections students are already making from previous learning, strengthen the synaptic connections being constructed, and encourage the continuance of this sense-making behavior (NVACS, 2010, p. 6).

- Support and instruct to the development of the new **big mathematical ideas** of:
  - **Circle** - a two-dimensional (flat) shape made by drawing a curve that is always the same distance from a point called the center.
  - **Triangle** - a two-dimensional (flat) shape with 3 sides.
  - **Rectangle** - a two-dimensional (flat) shape with 2 pairs of parallel sides (4 sides total) and 4 right angles.

- **Square** - a two-dimensional (flat) shape with 4 congruent sides and 4 right angles.
- **Hexagon** - a two-dimensional (flat) shape with 6 sides.
- **Trapezoid** - a two-dimensional (flat) shape with 4 sides, exactly 1 pair of which are parallel.
- **Rhombus** - a two-dimensional (flat) shape with 4 congruent sides.
- **Cube** - a three-dimensional shape (solid) whose 6 faces are all squares.
- **Cone** - a three-dimensional shape (solid) with a circular or elliptical base and a curved surface that tapers to the vertex.
- **Sphere** - a three-dimensional shape (solid) constructed so that every point of the surface is the same distance from a point called the center.
- **Cylinder** - a three-dimensional shape (solid) with one curved surface and two congruent flat ends that are circular or elliptical.
- **Vertex/corner** - the point at which the sides of a polygon, or the edges of a polyhedron meet.

- Watch for students' attempts at thinking about and using these new **strategic behaviors/strategies** to demonstrate their emerging understandings of the big mathematical ideas:
  - **Graphing**
  - **Classifying objects by attributes**
  - **Composing shapes** (making shapes out of other shapes; e.g., making a rectangle out of two triangles).
  - **Decomposing shapes** (breaking a shape into other shapes; e.g., making two triangles from a rectangle).
  - **Constructing shapes** (putting attributes together to build a shape; e.g., drawing three straight lines, connected at three separate corners, to create a closed shape called a triangle).

Over time, with supportive and scaffolded instruction and interactions, students come to more precise understandings of geometry, as well as develop appropriate precision with mathematics content and vocabulary.

On-going enrichment:

- Continue noting the ***Skills Across the Grade Level*** chart in the *Introduction* section (*Unit 5*, p. v). K.MD.3 and K.G.1-4 are standard expectations benchmarked to be secure by the end of this *Unit*. This includes classifying, counting and graphing objects; naming and describing shapes by name and using positional words (regardless of size and orientation); and identifying and comparing 2-D shapes by attributes (regardless of size and orientation). K.OA.3 & 6 and K.G.5 & 6 continue to be developed (See p. v.). This is important information for those day-to-day instructional decisions you make within each *Session* as to what discussions or activities to extend, cut short, emphasize, skip, etc.
- Expect all students to engage with the mathematics.

Essential Academic Vocabulary
Use these words consistently during instruction.

Essential Academic Vocabulary: (first time explicitly taught) *indicates *Word Resource Cards* are available in the materials	**Review Vocabulary:** (Vocabulary from *Number Corner* or prior *Units*)	
vertex or corner*	*compare**	*circle**
side*	*trapezoid**	*triangle**
flat	*hexagon**	*square**
round	*rhombus**	*rectangle**
solid	*above**	*length**
curved	*below**	
straight	*beside**	
sphere*	*next to**	
three-dimensional (3-D) shape*	*attribute**	
two-dimensional (2-D) shape*	*pattern**	
estimate*	*more/less*	
least*		
most*		

Additional terminology that students may need support with: shape(s)***,*** *sort, graph, in all,* color, large, small, *strategies, problem, order.*

Standards listed in **bold** indicate a focus of the lesson.

NVACS (Content and Practices)	Mathematical Development of the Big Idea	Instructional Clarifications & Considerations
Module 1- Session 1: What Do You Know About Shapes?		
K.MD.3 K.G.1 K.G.2 **K.G.4** MP.1 **MP.6** MP.7	**Access Prior Learning and Connections to Future Learning:** • Classify objects into categories and count the number of objects in different categories are covered in *Unit 7*. Describe and identify objects in the environment using geometric shape names is also addressed in *Unit 6*. **Beginning with the Big Idea and key Strategic Behaviors:** • naming shapes • **identifying shapes by their defining attributes**	**Guiding Questions:** • What shapes can we see in our world? • What makes shapes different from each other? How can a shape be described? **Instructional Notes:** • Visual Models are pattern blocks or preferably die cut-outs if available. • Pattern blocks are actually 3-dimensional shapes because they have a length as width and a height. • Use pattern block sorting as an anticipatory set. Consider tracing around the shape as you add it to the chart (it is the footprint that creates the 2-dimensional shape; the interior is not part of the shape, just the line segments create the shape). • Focus your conversation around the 2-dimensional shape formed by tracing around the pattern block on the poster. • Word resource cards are helpful for constructing the chart. • ELL suggestion says to sort by gender (boys, girls). Separating by gender may have negative impacts to students' identities, especially those who are gender fluid. Consider sorting by shirt color. **Literature Connection:** • *The Shape of Things* by Dayle Ann Dodds - good connection to point out how shapes are seen around our environment. Launches discussion of " What is a 2-D shape?" **Number Corner Connections:** • Classify objects into categories, count the number objects in different categories. It reappears in Oct, Dec., Jan, Feb, Mar, Apr, & May. • Describe and identify objects in the environment using geometric shape names. Addressed in Sept, Nov, and Dec.
Module 1- Session 2: What Is a Circle?		
K.MD.3 K.G.1 K.G.2 K.G.3 **K.G.4** MP.1 **MP.6** MP.7	**Access Prior Learning and Connections to Future Learning:** • Identify shapes as two-dimensional or three-dimensional is reinforced in *Unit 6*. • Identify shapes regardless of orientation or size is also covered in *Unit 6*. **Beginning with the Big Idea and key Strategic Behaviors:** • naming shapes • **identifying shapes by their defining attribute**	**Guiding Questions**: • What is a circle? • What makes shapes different from each other? • What is the difference between a 2-D and 3-D shape? **Instructional Notes:** • Visual models are various circles and spheres; clay spheres. • Omit all aspects of this lesson that smash a sphere into a circle - Step 9, 11, 12, 13. • After Step 8 – teacher & students makes spheres with clay. Omit students cutting their spheres in half; teacher only brings in other spherical objects including an orange (or other object that could be cut without losing its shape) as visuals; teacher only cuts the orange in half again like yesterday tracing around the half sphere to create the footprint of the circle, added to the chart from yesterday. • Continued steps discussion is based around the teachers 2-dimensional circle that the teacher created on the chart and the students clay spheres and other spherical objects. • In Step 16 – clarify that we can make circles out of the items names (such as "a clock" or "a plate") by tracing around it; you might bring examples of brainstorming items that might demonstrate this. **Number Corner Connections:** • Expected to be secure - Identify shapes as two-dimensional or three-dimensional. It is addressed in Sept. and Nov. months. • Identify shapes regardless of orientation or size. It is addressed in Sept. and Nov. months. **Writing and Enrichment:** • *Home Connections* p. 10 and *Home Connection* tab p. 99-103. Search for circles also needs to be clarified with students to reinforce that it is the outline of a clock is a circle...the clock itself could be a cylinder.

Module 1- Session 3: Pattern Block Sort and Count		
K. CC.3 **K.CC.6** K.CC.7 K.G.4 **K.MD.3** MP.1 **MP.2** MP.6	**Access Prior Learning and Connections to Future Learning:** • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes is reinforced in *Unit 6*. **Developing the Big Idea and key Strategic Behaviors:** • estimating • **classifying objects** • **graphing** **Developing to Secure:** • identifying shapes by their defining attributes	**Guiding Questions:** • How can I use math tools to explore shapes? • How can shapes be sorted? **Instructional Notes:** • Visual models are 2-D shapes cut-outs (or pattern blocks) and graphs. • Step 6 – clarify again that for a 2-dimensional shape we are only looking at the footprint of the shape, not including the interior; possibly reinforce by having students trace around the outside of the pattern blocks or provide shape templates. • *Shape Trace and Count* with pattern blocks, recording sheets and mats: Bridges web site. • Consider using the Shape Shifting Tool: http://www.ictgames.com/YRshape.html. **Number Corner Connections:** • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes is expected to be secure within this *Unit*. It is also addressed in Sept. and Nov. months. **Writing and Enrichment:** • As a warm-up game, consider projecting and hiding a shape on available technology. Reveal sections one at a time as students reason about what shapes it could be, having discussions throughout. By the third uncovering, student may be able to identify the shape. • Students create a math journal entry about how they grouped their shapes. Provide a sentence frame such as: These shapes go together because _____. • Additional prompts: What was the rule you used to sort? Could you have sorted them another way?
Module 1- Session 4: Circles & Squares Race to Twenty		
K.CC.1 K.CC.4 **K.CC.6** K.CC.7 **K.OA.3** MP.1 MP.2 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • understanding hierarchical inclusion • **using the five-structure** • recognizing magnitude • comparing	**Guiding Questions:** • How do I know if a number is greater than or less than; bigger or smaller? • Who is closest to 20? How many more do I need to make 20? • How do I know who has more? How do I know who has less? **Instructional Notes:** • Visual models is the number line. • While this game uses circles and squares to keep track of rolls, the main focus here is using a number line with landmark numbers, such as 5, 10, 15. Consider providing opportunities (for the first few times of play) to play the game with adult support, in order to foster discussions around the guiding questions. • Digital display tool link on the Bridges web site. **Number Corner Connections:** • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group is a developing concept. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May. **Child Watching and Assessments:** • **Sort & Count CHECKPOINT** – work with 4 students (see p. 18 and T3). Also see reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab p. 54. For the Assessment – consider pattern block as just objects for this work; shape attributes are not considered in this assessment tasks.
Module 1- Session 5: Introducing Work Place 5A Circles & Squares Race to Twenty		
K.CC.1 **K.CC.6** K.CC.7 **K.OA.3** MP.1 MP.2 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • using hierarchical inclusion • **using the five-structure** • recognizing magnitude • using composition	**Guiding Questions:** • How do I know if a number is greater than or less than/bigger than or smaller than another number? How can the number line help me? **Instructional Notes:** • Visual model is the number line representation. • Alternating colors each roll is to emphasize compositions of numbers and understanding of number relationships. • Students are problem solving "how many more?" • Digital display tool link on the Bridges web site. **Number Corner Connections:** • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group is a developing concept. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May. ***-continues on next page-***

		Writing and Enrichment: • See *Teacher Masters* (p. T4) of *the Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (T. 5) for game variations. • Optional *Unit 5 Work Place Log* available on p. T6. • *Home Connections* p. 21 and *Home Connection* tab pp. 105-109.
Module 2- Session 1: Shape Sorting		
K.CC.1 K.CC.6 **K.MD.3** K.G.1 K.G.2 K.G.3 **K.G.4** MP.1 **MP.7** **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes are reinforced in *Unit 6*. **Developing the Big Idea and key Strategic Behaviors:** • naming shapes • identifying shapes by their defining attributes • **analyzing and classifying shapes**	**Guiding Questions:** • What happens when you change a shape's position and orientation (slides, flips, turns)? • What are attributes or properties of a shape? • Which attributes are important to naming a shape? **Instructional Notes:** • Visual models are the shape cards (consider also using 2-D shape models in various colors, sizes, and orientations). • Step 2 – reinforce discussions about 2-dimensional shapes not being able to be picked up and 3-dimensional shapes having thickness and "stackability". Emphasize that students may describe shapes initially using visual descriptions (long, pointy, etc.) but focus attention on the relevant attributes (e.g. number of sides, sides of equal length, etc.). Note: color is a non-defining attribute. • Step 7 – emphasize the use of attributes of shapes during the student discussions. • Instead of using the Bridges shape cards only (which show the shapes in only one type and only one orientation), consider including the WCSD Shape Card options for variety. **Literature Connection:** • *Shapes, Shapes, Shapes* by Tana Hoban **Number Corner Connections:** • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes is expected to be secure within this unit. It is also addressed in the months of Sept. and Nov.
Module 2- Session 2: Sorting & Graphing Shapes by Name		
K.CC.6 **K.MD.3** K.G.1 K.G.2 **K.G.4** MP.1 **MP.7** **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Identify shapes as two-dimensional or three-dimensional is reinforced also in *Unit 6*. • Identify shapes regardless of orientation or size and analyze and compare two-dimensional shapes using informal language to describe their parts and attributes are also reinforced in *Unit 6*. • Model two-dimensional shapes in the world by drawing them is also reinforced in *Unit 6*. **Developing the Big Idea and key Strategic Behaviors:** • **graphing** **Developing to Secure:** • naming shapes • identifying shapes by their defining attributes • **analyzing and classifying shapes**	**Guiding Questions:** • What happens when you change a shape's position and orientation (slides, flips, and turns)? • What are attributes or properties of a shape? • Which attributes are important to naming a shape? **Instructional Notes:** • Visual models are various 2-D shapes, shape cards, and written equations. • Step 13 – consider singing the Shape Song as students are drawing shapes **(use updated WCSD shape songs to replace p. T2, will be place on the WCSD C&I website when available);** consider having tools such as shape templates or straight edges to help with drawing straight lines. • Use the Bridges shape cards and the WCSD shape options. **Number Corner Connections:** • Expected to be secure - Identify shapes as two-dimensional or three-dimensional. It is addressed in Sept. and Nov. months. • Identify shapes regardless of orientation or size. It is addressed in Sept. and Nov. months. • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. It is also addressed in Sept. and Nov. months. • Developing concept/skill - model two-dimensional shapes in the world by drawing them. **Writing and Enrichment:** • Have students record their shape drawings in math journal and label attributes on the shape drawings using their own informal language and invented spelling. • *Home Connections* p.10 and *Home Connection* tab pp. 111-115; consider helping students be able to describe and justify the attributes during the Bingo game.

Module 2- Session 3: Sorting Shapes by Sides & Corners

K.CC.6 **K.MD.3** K.G.1 K.G.2 K.G.3 **K.G.4** MP.1 **MP.4** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Identify shapes as two-dimensional or three-dimensional, identify shapes regardless of orientation or size, analyze and compare two-dimensional shapes, and use informal language to describe their parts and attributes are all reinforced in *Unit 6*. • Model two-dimensional shapes in the world by drawing them is addressed in *Unit 6*. **Developing the Big Idea and key Strategic Behaviors:** • **graphing** **Developing to Secure:** • identifying shapes by their defining attributes • **classifying shapes by attributes**	**Guiding Questions**: • How are shapes alike and different? What makes shapes different from each other? • What are attributes or properties of a shape? **Instructional Notes:** • Visual models are various 2-D shapes and shape cards. • Consider integrating the WCSD shape options for other shape types. • Circle is a continuous closed curve. Closed means when drawing a square and getting to that last corner, I stop to close the shape. I do not continue going over the lines already drawn. **Number Corner Connections:** • Expected to be secure - Identify shapes as two-dimensional or three-dimensional. This is addressed in Sept and Nov. months. • Identify shapes regardless of orientation or size. It is addressed in Sept. and Nov. months. • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. This is also addressed in Sept. and Nov. months.

Module 2- Session 4: Goodbye Shapes!

K.CC.6 K.MD.3 K.G.1 **K.G.2** K.G.3 **K.G.4** MP.1 **MP.7** **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Identify shapes as two-dimensional or three-dimensional and identify shapes regardless of orientation or size are reinforced in *Unit 6*. **Developing the Big Idea and key Strategic Behaviors:** • classifying objects • **identifying shapes by their defining attributes** • **analyzing and comparing shapes** • graphing	**Guiding Questions:** • How can shapes be sorted? • What are attributes or properties of a shape? • How are shapes alike and different? What makes shapes different from each other? **Instructional Note:** • Visual models are various 2-D shapes. **Number Corner Connections:** • Expected to be secure at this time - Identify shapes as two-dimensional or three-dimensional. This is also addressed in Sept. and Nov. months. • Identify shapes regardless of orientation or size. It is addressed in Sept. and Nov. months.

Module 2- Session 5: Introducing Work Place 5B Geoboard Shapes

K.G.1 **K.G.2** K.G.3 K.G.4 **K.G.5** **MP.1** **MP.6**	**Access Prior Learning and Connections to Future Learning:** • Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to are reinforced in *Unit 6*. **Developing the Big Idea and key Strategic Behaviors:** • classifying objects • **identifying shapes by their defining attributes** **Developing to Secure:** • **constructing shapes**	**Guiding Questions:** • How can we describe the position or location of an object or shape? What are some words we use when we describe the position or location of objects or shapes? **Instructional Notes:** • Visual models are various 2-D shapes, Geoboard shape cards, shapes constructed on the Geoboards. • Opportunity for students to use complete sentences and positional words when describing their shapes on the geoboard. (e.g. "My rhombus starts in the top row in the middle…") • Reinforce having students place the geoboard on top of the card to see how the shape they constructed is similar or different from the shape card. • Digital display tool, Web app or Tablet link on the Bridges web site. • Digital Geoboard - Geoboard by The Math Learning Center www.mathlearningcenter.org. **Literature Connection:** • *All About Where* by Tana Hoban ***-continues on next page-***

		Number Corner Connections: • Expected to be secure - Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to. Months Sep., Nov., and Dec. feature this standard. **Writing and Enrichment:** • See *Teacher Masters* (M2 S5 p. T3) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (p. T4) for game variations. • *Home Connection* p. 22 and *Home Connection* tab pp. 117-123. Consider sending home some of the copied WCSD Shape Options to enrich the home experience.
Module 3- Session 1: Introducing Work Place 5C Shapes & Spinners Graphing		
K.CC.6 **K.MD.3** K.G.1 K.G.2 K.G.3 K.G.4 **K.G.5** MP.1 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Classify objects into categories and count the number objects in different categories are introduced and reinforced in *Units 1, 4,* and *7*. • Model two-dimensional shapes in the world by drawing them is addressed in *Unit 6*. **Developing the Big Idea and key Strategic Behaviors:** • **constructing shapes** • graphing **Developing to Secure:** • naming shapes • classifying shapes • **identifying shapes by their defining attributes**	**Guiding Question:** • Why do shapes have names? **Instructional Notes:** • Visual models are drawn shapes. • Consider providing students with rulers, card stock, templates, or other straight edges to assist with their shape constructions. • Digital display tool link on the Bridges web site. **Literature Connection:** • *Square Cat* by Elizabeth Schoonmaker **Number Corner Connections:** • Expected to be secure - Classify objects into categories, count the number objects in different categories. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May. **Writing and Enrichment:** • See *Teacher Masters* (M3 S1 p. T1) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (p. T2) for game variations.
Module 3- Session 2: Introducing Work Place 5D Pattern Block Designs		
K.CC.6 K.MD.3 K.G.1 K.G.2 K.G.3 **K.G.6** MP.1 **MP.4** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Classify objects into categories and count the number objects in different categories are introduced and reinforced in *Units 1, 4*, and *7*. • Compose simple shapes to form larger shapes. It is also covered in *Unit 2*. **Developing the Big Idea and key Strategic Behaviors:** • constructing shapes • **composing and decomposing shapes** **Developing to Secure:** • naming shapes • classifying shapes • identifying shapes by their defining attributes	**Guiding Questions:** • How do the pattern block shapes relate to one another? • How can I use smaller shapes to form larger shapes? • How do we use shapes in daily life? Where can I find shapes around my world? **Instructional Notes:** • Visual models are pattern blocks (or die cut-outs or foam shapes) and design mats. • If using actual pattern blocks, clarify to students you are using the footprint of the shape for recording how many on the recording sheet and not actually the 3-D shape. • Digital display tool link on the Bridges web site. **Literature Connections:** • *Color Farm* by Lois Elhert • *Color Zoo* by Lois Elhert • *I Spy Shapes in Art* by Lucy Micklethwait **Number Corner Connections:** • Expected to be secure - Classify objects into categories, count the number objects in different categories. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May. **Writing and Enrichment:** • See *Teacher Masters* (M3 S2 p. T4) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instruction* (p. T2) for game variations. • *Home Connections* p. 10 and *Home Connection* tab pp. 125-130.

Module 3- Session 3: Introducing Work Place 5E Spin & Count Shapes

K.CC.6 **K.OA.4** K.MD.3 K.G.1 K.G.2 K.G.5 **MP.1** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Classify objects into categories and count the number objects in different categories are introduced and reinforced in *Units 1, 4*, and *7*. • Decompose numbers less than or equal to 10 into pairs into more than one way is covered in all units except *Unit 4*. **Developing the Big Idea and key Strategic Behaviors:** • **identifying combinations to 10** **Developing to Secure:** • naming shapes • classifying shapes • identifying shapes by their defining attributes **Secure:** • **understanding cardinality**	**Guiding Questions:** • Why do shapes have names? • How does grouping help me count? **Instructional Notes:** • Visual models are 0-5 numeral die and shape pictures. • Consider providing students with rulers, card stock templates, or other straight edges to assist with their shape constructions. • Digital display tool link on the Bridges web site. (see p. 2). **Number Corner Connections:** • Expected to be secure - Classify objects into categories, count the number objects in different categories. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May. • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way. Explored in all months except Sept. **Writing and Enrichment:** • See *Teacher Masters* (M3 S3 p. T20) of the *Work Place Guides for Differentiation* ideas

Module 3- Session 4: Hungry Caterpillars

K.CC.6 K.G.1 K.G.2 **K.G.4** **K.G.6** **MP.1** **MP.5** **MP.7**	**Access Prior Learning and Connections to Future Learning**: • Identify shapes as two-dimensional or three-dimensional, identify shapes regardless of orientation or size and analyze and compare two-dimensional shapes using informal language to describe their parts and attributes are all reinforced in *Unit 6*. • Compose simple shapes to form larger shapes is also addressed in *Unit 2*. **Developing the Big Idea and key Strategic Behaviors:** • **composing and decomposing shapes** **Developing to Secure:** • **naming shapes** • classifying shapes • identifying shapes by their defining attributes	**Guiding Questions:** • How do the pattern block shapes relate to one another? • How can I use smaller shapes to form larger shapes? **Instructional Notes:** • Visual models are caterpillar game boards, shape spinners, and pattern blocks or 2-D pattern block shapes. • This session's focus is working on strategies for composing and decomposing shapes. • Step 8 – Clarify to students you are using the footprint of the shape not actually the 3-D shape. • Digital display tool link on the Bridges web site.(see p. 2). **Literature Connections:** • *Ten Wriggly Wiggly Caterpillars* by Tiger Tales and Debbie Tarbett • *The Hungry Caterpillar* by Eric Carle **Number Corner Connections:** • Expected to be secure - Identify shapes as two-dimensional or three-dimensional. It is addressed in Sept. and Nov. months. • Identify shapes regardless of orientation or size. This is addressed in Sept. and Nov. months. • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. This is also addressed in Sept. and Nov. months. **Child Watching and Assessments:** • **Two-Dimensional Shapes & Their Attributes CHECKPOINT** – observe students in *Work Places* (see p. 18 and T23). Also, see reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab p. 56.

Module 3- Session 5: Introducing Work Place 5F Hungry Caterpillars		
K.CC.6 K.G.1 K.G.2 **K.G.4** **K.G.6** **MP.1** **MP.5** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Identify shapes as two-dimensional or three-dimensional, identify shapes regardless of orientation or size and analyze and compare two-dimensional shapes using informal language to describe their parts and attributes are all reinforced in *Unit 6*. • Compose simple shapes to form larger shapes is also addressed in *Unit 2*. **Developing the Big Idea and key Strategic Behaviors:** • **composing and decomposing shapes** **Developing to Secure:** • **naming shapes** • classifying shapes • identifying shapes by their defining attributes	**Guiding Questions:** • How do the pattern block shapes relate to one another? • How can I use smaller shapes to form larger shapes? • What is the best strategy to fill your caterpillar to win this game? **Instructional Note:** • Visual models are pattern blocks or 2-D pattern block shape cut outs. **Literature Connections:** • *Ten Wriggly Wiggly Caterpillars* by Tiger Tales and Debbie Tarbett • *The Hungry Caterpillar* by Eric Carle **Number Corner Connections:** • Expected to be secure - Identify shapes as two-dimensional or three-dimensional. This is addressed in Sept. and Nov. months. • Identify shapes regardless of orientation or size. This is addressed in Sept. and Nov. months. • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. This is also addressed in Sept. and Nov. months. **Writing and Enrichment:** • See *Teacher Masters* (M3 S5 p. T24) of the *Work Place Guides for Differentiation* ideas. • See *Work Place Instructions* (p. T25) for game variations. • *Home Connection* p. 21 and *Home Connections* tab pp. 131-132.
Module 4- Session 1: Shapes & More Shapes		
K.CC.3 K.CC.6 K.MD.3 K.G.1 K.G.2 K.G.3 K.G.4 K.G.5 K.G.6 **MP.1** **MP.4** **MP.5** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Identify shapes as two-dimensional or three-dimensional, identify shapes regardless of orientation or size and analyze and compare two-dimensional shapes using informal language to describe their parts and attributes are all reinforced in *Unit 6*. • Compose simple shapes to form larger shapes is also addressed in *Unit 2*. **Developing the Big Idea and key Strategic Behaviors:** • **constructing shapes** • **graphing** • composing and decomposing shapes **Developing to Secure:** • naming shapes • classifying shapes • identifying shapes by their defining attributes	**Guiding Questions:** • How do we use shapes in daily life? • Where can I find shapes around my world? **Instructional Notes:** • Visual models are the 5 *Work Place* models and various game board visuals. • Emphasize that students can describe shapes initially using visual descriptions (long, pointy, etc.) but try to focus their attention on the relevant attributes (e.g. number of sides, sides of equal length). A discussion here would also include how color is a non-defining attribute. **Literature Connection:** • *Captain Invincible and the Space Shapes* by Stuart J. Murphy **Number Corner Connections:** • Expected to be secure - Identify shapes as two-dimensional or three-dimensional. This is addressed in Sept. and Nov. months. • Identify shapes regardless of orientation or size. This is addressed in Sept. and Nov. months. • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. This is also addressed in Sept. and Nov. months.

Module 4- Session 2: There's a Shape in My Pocket, Day 1		
K.G.1 K.G.2 K.G.3 **K.G.4** **MP.1** **MP.3** MP.8	**Access Prior Learning and Connections to Future Learning:** • Identify shapes regardless of their orientation or size, and analyze and compare two-dimensional shapes using informal language to describe their parts and attributes are reinforced in *Unit 6*. **Developing the Big Idea and key Strategic Behaviors:** • **analyzing data** **Developing to Secure:** • naming shapes • **classifying shapes** • **identifying shapes by their defining attributes**	**Guiding Questions:** • Why do shapes have names? • What questions can I ask to find out what shape it is quickly? **Instructional Notes:** • Visual models are 2-D shapes. • Consider enriching with the WCSD Shape options. Note that color is a non-defining attribute. • This activity provides opportunities to discuss logical reasoning strategies and questions that are most efficient to deduce what shape is in the person's pocket. • Digital display tool link on the Bridges web site. **Number Corner Connections:** • Expected to be secure - Identify shapes regardless of orientation or size. This is addressed in Sep.t and Nov. months. • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. This is addressed in Sept. and Nov. months. **Writing and Enrichment:** • *Home Connection* p. 10 and *Home Connection* tab pp. 133-134.
Module 4- Session 3: There's a Shape in My Pocket, Day 2		
K.G.1 K.G.2 K.G.3 **K.G.4** **MP.1** **MP.3** MP.8	**Access Prior Learning and Connections to Future Learning:** • Identify shapes regardless of orientation or size and analyze and compare two-dimensional shapes using informal language to describe their parts and attributes are all reinforced in *Unit 6*. **Developing the Big Idea and key Strategic Behaviors:** • **analyzing data** **Developing to Secure:** • naming shapes • **classifying shapes** • **identifying shapes by their defining attributes**	**Guiding Questions:** • Why do shapes have names? • What questions can I ask to find out what shape it is quickly? **Instructional Notes:** • Visual models are 2-D shapes. • Consider enriching with the WCSD Shape options. Note that color is a non-defining attribute. • This activity provides opportunities to discuss logical reasoning strategies and questions that are most efficient to deduce what shape is in the person's pocket. **Number Corner Connections:** • Expected to be secure - Identify shapes regardless of orientation or size. It is addressed in Sept. and Nov. months. • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. This is also addressed in Sept. and Nov. months.
Module 4- Session 4: Triangles & Squares (optional)		
K.G.1 K.G.2 K.G.3 K.G.4 **K.G.6** MP.6 MP.7	**Access Prior Learning and Connections to Future Learning:** **Developing the Big Idea and key Strategic Behaviors:** • composing and decomposing shapes	**Instructional Notes:** • **Optional *Session* or time can be used as an F/D/E day.** • Visual models are triangles and squares.
Module 4- Session 5: Assembling the Shoo Fly Quilt (optional)		
K.G.1 K.G.2 K.G.4 **K.G.6** MP.7 MP.8	**Access Prior Learning and Connections to Future Learning**: **Developing the Big Idea and key Strategic Behaviors:** • composing and decomposing shapes	**Instructional Notes:** • **Optional *Session* or time can be used as an F/D/E day.** • Visual models are triangles and squares. **Writing and Enrichment:** • *Home Connections* p. 20 and *Home Connection* tab p. 135-136.

References

Battista, M. T. (2012). *Cognition-based assessment & teaching of addition and subtraction: Building on students' reasoning.* Portsmouth, NH: Heinemann.

Battista, M. T. (2012). *Cognition-based assessment & teaching of geometric shapes*: B*uilding on students' reasoning.* Portsmouth, NH: Heinemann.

Boaler, J. (2016). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages, and innovative teaching.* San Francisco, CA: Jossey-Bass & Pfeiffer Imprints.

Boaler, J. (n.d.). *Seeing as understanding: The importance of visual mathematics for our brain and learning.* Retrieved March 15, 2019, from https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/Visual-Math-Paper-vF.pdf

Chapin, S. H., & Johnson, A. (2006). *Math matters: Understanding the math you teach, Grades K-8.* Sausalito, CA: Math Solutions Publications.

Council of Chief State School Officers. (2010). The Nevada Academic Content Standards. Retrieved from http://www.doe.nv.gov/uploadedFiles/nde.doe.nv.gov/content/Standards_Instructional_Support/Nevada_Academic_Standards/Math_Documents/mathstandards.pdf.

Common Core State Standards Writing Team. (2013). *Progressions for the Common Core State Standards in Mathematics (draft). Geometry, K-6.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

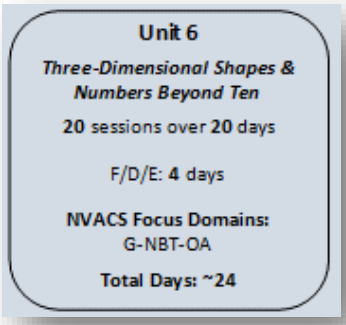
Van de Walle, J.A., Karp, K.S., & Bay-Williams, J.M. (2016). *Elementary and middle school mathematics: Teaching developmentally*. Boston, MA: Pearson.

Van de Walle, J., Karp, K., Lovin, L., & Bay-Williams, J. (2014). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades Pre-K-2* (2nd ed.). Boston, MA: Pearson.

This page is intentionally left blank

Kindergarten Unit 6: Three-Dimensional Shapes & Numbers Beyond Ten

Big Conceptual Idea: K-6 Progression on Geometry (pp. 1-7) K-5 Progression on Number and Operations in Base Ten (pp. 1-5) K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking (pp. 1-11)



Kindergarten Curriculum Pacing Framework: Balanced Calendar

***Read the Bridges Unit Overview/Introduction for Unit 6 pp. i-vi. Read each Module Overview for the current week's sessions and the current Session Summary**, along with details for the teaching of each session, as you work through Unit 6. These Introduction/Overview/Summary sections provide focus, clarity, vocabulary, definitions, and examples for the "big mathematical ideas and understandings" critical to Kindergarten. This information will support your professional decision-making within the Modules and Sessions as needed.*

Mathematical Background: Read Bridges *Unit 6 Overview* and *Introduction* (pp. i-vi)	**Unit Essential Questions for the Teacher:** How do I support my students' use of precise mathematical vocabulary to describe similarities and differences among two-dimensional and three-dimensional shapes? How do I extend understanding and number sense of 5 and combinations within 5 to explore number sense of 10, and then to 10 and some more?

Instructional note:
Unit 6 extends the development of **spatial reasoning** into **comparisons of two-dimensional and three-dimensional shapes**. According to the *K-6 Progression on Geometry* (document linked above), the three most important goals for elementary geometry are: "Geometric shapes, their components (e.g., sides, angles, faces), their properties, and their categorization based on those properties; Composing and decomposing geometric shapes; Spatial relations and spatial structuring" (p.2). The first two *Modules* of *Unit 6* continue to provide opportunities for students to establish foundations for each of these understandings. Students are expected to name, sort, locate, describe by attributes, and construct two-dimensional and three-dimensional shapes. This work also supports *Mathematical Practice 7: Look for and make use of structure*, *Mathematical Practice 3: Construct viable arguments and critique the reasoning of others*, *Mathematical Practice 4: Model with mathematics*, and *Mathematical Practice 6: Attend to precision* (NVACS, 2010, pp.6-8).

There is also a heavy focus in *Unit 6* on the connections and relationships critical to the development of early number sense and operations and algebraic thinking. The interactions within this *Unit* are opportunities for students to build "procedural fluency" (flexibility, accuracy, efficiency, and appropriateness – see NVACS p.6) with **number combinations within 5** and flexible and sophisticated **use of strategies**. Understanding is extended to writing equations with careful attention given to the explicit **connection from models to written equations**. **Numbers within 10** and then **ten and some more** are also explored, laying foundational understanding for the base ten system. **Flexible understanding of 1s, 5s, and 10s** is encouraged and reinforced by relating known understandings of number to money (pennies, nickels, dimes) and to a variety of other models and tools (frames, cubes, craft sticks, fingers, number racks, links, collections, number lines, the calendar grid, etc.). In addition, explicit connections and relationships, provide opportunity for students to solidify the foundational skills and strategies of subitizing, counting, numeral writing, one-to-one tagging, forward and backward counting, organizing, quantity, counting on and using the five-structure. Important foundations for algebra continue to be supported with questions such as, "How many more?" or "How many in all?" These conceptual understandings of number, along with the geometric concepts and spatial reasoning developed, lay the mathematical foundations for all higher-level mathematics.

The mathematical content of *Unit 6*:
Children construct understandings in connected and integrated ways, not as isolated, individual pieces. Therefore, continually ask students to explain how they are problem solving ("How did you know?", "What made you think that?", etc.) so you can make explicit the connections students are already making from previous learning, strengthen the synaptic connections being constructed, and encourage the continuance of this sense-making behavior (NVACS, 2010, p. 6).

- Support and instruct to the development of the new **big mathematical ideas** of:
  - **Circle** - a two-dimensional (flat) shape made by drawing a curve that is always the same distance from a point called the center.
  - **Triangle** - a two-dimensional (flat) shape with 3 sides.
  - **Rectangle** - a two-dimensional (flat) shape with 2 pairs of parallel sides (4 sides total) and 4 right angles.
  - **Square** - a two-dimensional (flat) shape with 4 congruent sides and 4 right angles.
  - **Hexagon** - a two-dimensional (flat) shape with 6 sides.
  - **Trapezoid** - a two-dimensional (flat) shape with 4 sides, exactly 1 pair of which are parallel.
  - **Rhombus** - a two-dimensional (flat) shape with 4 congruent sides.

- **Cube** - a three-dimensional shape (solid) whose 6 faces are all squares.
- **Cone** - a three-dimensional shape (solid) with a circular or elliptical base and a curved surface that tapers to the vertex.
- **Sphere** - a three-dimensional shape (solid) constructed so that every point of the surface is the same distance from a point called the center.
- **Cylinder** - a three-dimensional shape (solid) with one curved surface and two congruent flat ends that are circular or elliptical.
- **Edge** - (1) Any side of a polyhedron's faces. (2) A line segment or curve where two surfaces of a geometric solid meet. (e.g., The edge is the circular portion or circumference of the base of a cone.)
- **Face** - a flat surface on a 3-dimensional figure. Some special faces are called bases. More generally, any 2-dimensional surface on a 3-dimensional figure.
- **Surface** - the boundary of a 3-dimensional object. The part of an object that is next to the air. Common surfaces include the top of a body of water, the outermost part of a ball, and the topmost layer of ground that covers the earth.
- **Pyramid** - a polyhedron made up of any polygonal region for a base, a vertex (apex) not in the plane of the base, and all of the line segments with one endpoint at the apex and the other endpoint on an edge of the base. All faces, except perhaps the base, are triangular. Pyramids get their name from the shape of their base.
- **Rectangular prism** - a prism with rectangular bases. The four faces that are not bases are either rectangles or parallelograms. For example, a brick models a rectangular prism in which all sides are rectangles.
- **Triangular prism** - a prism whose bases are triangles.
- **Vertex** or **corner** - the point at which the rays of an angle, the sides of a polygon, or the edges of a polyhedron meet. Plural is vertexes or vertices.

- Watch for students' attempts at thinking about and using these new **strategic behaviors/strategies** to demonstrate their emerging understandings of the big mathematical ideas:
  - **Drawing shapes**
  - **Constructing shapes**
  - **Writing equations**
  - **Using the five and/or ten-structure**

Over time, with supportive and scaffolded instruction and interactions, students come to more precise understandings of geometry; as well as, develop appropriate precision with mathematics content and vocabulary. Intentionality with the context and range of numbers students work with supports number sense development and expansion.

On-going enrichment:

- Continue noting the ***Skills Across the Grade Level*** chart in the *Introduction* section (*Unit 6*, pp. iv-v). Please note the standards for K.CC and K.G that are benchmarked to be secure by the end of this *Unit*. This is important information for those day-to-day instructional decisions you make within each *Session* as to what discussions or activities to extend, cut short, emphasize, skip, etc.
- Expect all students to engage in the math.

Essential Academic Vocabulary
Use these words consistently during instruction.

Essential Academic Vocabulary: (first time explicitly taught) *indicates *Word Resource Cards* are available in the materials	**Review Vocabulary:** (Vocabulary from *Number Corner* or prior *Units*)		
cone*	*one*, two, three,*	*between**	*sphere**
cube*	*four, five,*	*circle**	*three-dimensional (3-D) shape**
cylinder*	*ones**	*triangle**	*two-dimensional (2-D) shape**
edge*	*tens**	*square**	*longer than*
face*	*equation**	*rectangle**	*shorter than*
surface*	*addition*	*hexagon**	vertex or corner*
estimate*	*add**	*rhombus**	*penny**
pyramid*	*more**	*trapezoid**	*less than**
rectangular prism*	*less**	*attribute**	*greater than**
triangular prism *			
dime*			
expression*			

Additional terminology that students may need support with: sort, solid, short, tall, combinations, problem, in all, compare*, flat.

Standards listed in **bold** indicate a focus of the lesson.

NVACS (Content and Practices)	Mathematical Development of the Big Idea	Instructional Clarifications & Considerations
Module 1- Session 1: Mystery Bag Sorting		
K.CC.1 K.MD.3 K.G.1 K.G.2 K.G.3 **K.G.4** MP.1 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Describe and identify objects in the environment using geometric shape names and identify shapes regardless of orientation or size were addressed in *Unit 5*. • Use informal language to describe the parts and attributes of 2-D and 3-D shapes, as well as the similarities and differences between various 2-D and 3-D shapes are addressed in *Units 5* and *6*. • Identify shapes as two-dimensional or three-dimensional is reinforced from *Unit 5*. **Developing the Big Idea and key Strategic Behaviors:** • **classifying shapes** • identifying shapes by their defining attributes (2-D and 3-D) **Secure:** • naming shapes	**Guiding Questions:** • What shapes can we see in our world? • What makes shapes different from each other? • How can we sort shapes? How can a shape be described? • What is the difference between a 2-D and 3-D shape? **Instructional Notes:** • Visual models are a variety of 2-D and 3-D shapes which you have collected (save these shapes also for future *Sessions*). • For 2-D shapes, consider using the Bridges Shape Cards and/or the WCSD Shape options. The traced footprint of a 3-D shape is what creates the 2-D shape. The interior is not part of the shape, only the line segments creating the outline for the shape. • Due to possible confusions with shapes and attributes, skipping p. 1 in the *Student Book* is recommended. • Step 12 - 2-D squares do not have faces only 3-D shapes can have faces. Instead, for combined collections of 2-D and 3-D shapes consider sorting by: shapes that have thickness and shapes that do not have thickness; shapes that have lines and shapes that do not have lines; shapes that have corners and shapes that do not have corners. To increase opportunities for sorting, create a sorting rule for a collection of 3-D shapes only by attributes that are consistent to 3-D shapes. • Leave the collection of objects out for students to explore. Encourage sorting and building with the collection of objects. Students might generate ideas about shapes that have vertices/corners and those without rectangular or circular. Invite students to determine which objects roll, stack or slide. • Encourage students to bring in objects from home. Students can lead the activity and gain experience describing the features of the shapes. **Number Corner Connections:** • September Calendar: Circle, Rectangle, Triangle, Square, Shape Posters, Shape Hunter. • Describe and identify objects in the environment using geometric shape names. This is also addressed in Sept., Nov., and Dec. • Use informal language to describe the parts and attributes of 2-D and 3-D shapes, as well as the similarities and differences between various 2-D and 3-D shapes. • Reviewed, practiced or extended to higher levels: Identify shapes regardless of orientation or size. This is addressed in the months of Sept. and Nov. **Writing and Enrichment:** • Students create a math journal entry about how the class grouped their shapes. Provide a sentence frame such as: These shapes go together because _____. Additional prompts: What was the rule you used to sort? Could you have sorted them another way? • Consider adding Mystery Boxes: Take off the labels or cover the labels and have students guess what they think might be in the boxes. Attend to size, corners, etc. • *Student Books* are introduced for the first time.
Module 1- Session 2: What is a Sphere?		
K.CC.2 **K.OA.1** K.OA.2 K.G.1 **K.G.3** **K.G.4** MP.1 MP.2 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Use informal language to describe the parts and attributes of 2-D and 3-D shapes, as well as the similarities and differences between various 2- D and 3-D and shapes, are addressed in *Units 5* and *6*. • Identify shapes as two-dimensional or three-dimensional is reinforced from *Unit 5*.	**Guiding Questions:** • What makes a circle different than a sphere? • What is the difference between a 2-D and 3-D shape? • Why do shapes have names? • What makes a sphere different than a cube? **Instructional Notes:** • Visual models are various spheres and circles. • For 2-D shapes consider using the Bridges Shape Cards and/or the WCSD Shape Options. • Step 2: The examples, coin or CD/DVD are not true circles. These objects have thickness and are three-dimensional. • Discuss that a sphere can roll. Consider adding a roll, stack, slide exploration here to compare 3-D shapes. Bring out the modeling clay and experiment with making spheres. ***-continues on next page-***

	Developing and securing the Big Idea and key Strategic Behaviors: • **classifying shapes** • identifying shapes by their defining attributes (2-D and 3-D) **Secure:** • naming shapes	**Number Corner Connections:** • Expected to be secure within this unit - Use informal language to describe the parts and attributes of 2-D and 3-D shapes, as well as the similarities and differences between various 2-D and 3-D shapes. This is addressed in Sept. and Nov. months. • Reviewed, practiced or extended to higher levels - Identify shapes regardless of orientation or size. It is addressed in Sept. and Nov. months. **Writing and Enrichment:** • *Home Connection* p. 10 and *Home Connection* tab pp. 137-138.
Module 1- Session 3: Which Cylinder Holds More? Part 1 (omit)		
K.G.4 K.MP.1 **MP.7**	**Access Prior Learning and Connections to Future Learning:** **Beginning with the Big Idea and key Strategic Behaviors:** • Developing measurement concepts	**Instructional Notes:** • Omit all of *Session 3* and *Session 4* including the Cylinder Tens and Ones CHECKPOINT. • Important kindergarten concepts omitted here can be addressed by using a WCSD Additional *Work Place.* These are posted in the Kindergarten Teacher Community on Microsoft Teams (General Channel, Kinder Files, Bridges folder). • Consider doing the organizing of cubes as a separate lesson not connected to the capacity of a cylinder, if desired or needed by particular students.
Module 1- Session 4: Which Cylinder Holds More? Part 2 (omit)		
K.G.4 MP.1	**Access Prior Learning and Connections to Future Learning:** **Beginning with the Big Idea and key Strategic Behaviors:** • developing measurement concepts	**Instructional Notes:** • Omit all of *Session 3* and *Session 4* including the Cylinder Tens and Ones CHECKPOINT. • Important kindergarten concepts omitted here can be addressed by using a WCSD Additional *Work Place.* These are posted in the Kindergarten Teacher Community on Microsoft Teams (General Channel, Kinder Files, Bridges folder). • Consider the organizing of cubes as a separate lesson, not connected to the capacity of a cylinder, if desired or needed by particular students.
Module 1- Session 5: Shape Detectives		
K.CC.2 K.CC.6 K.CC.7 **K.MD.3** **K.G.1** K.G.2 K.G.3 **K.G.4** MP.1 MP.2 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Classify objects into categories and count the number objects in different categories are also covered in *Unit 7*. • Describe and identify objects in the environment using geometric shape names is reinforced from in *Unit 5*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing and securing the Big Idea and key Strategic Behaviors:** • **classifying shapes** • identifying shapes by their defining attributes (2-D and 3-D) **Secure:** • naming shapes	**Guiding Questions:** • What shapes can we see in our world? Where can I find shapes around my world? • How do we use shapes in daily life? • How are (shape)____ and _(shape)____ similar? different? **Instructional Notes:** • Visual models are shape display cards, Geoblocks, and various precise models of 3-D shapes. • Make sure you have some clear models and Geoblocks around the room. Modify preparation ideas on p. 22 to ensure clear models, such as the geometric solids, ABC cubes, dice, certain boxes, rubik's cube, tube of lip balm, etc. • Poor examples included: Cone: ice cream cones, traffic cone, teepee, party hat; Cube: unifix cube; Cylinder: drinking glasses, drinking straw, waste basket, rolled up paper, paper towel or toilet paper roll. • Focus in on the math vocabulary of edge, face, vertex, and surface. **Number Corner Connections:** • Expected to be secure - Classify objects into categories, count the number objects in different categories. This reappears in Oct, Dec., Jan, Feb, Mar, Apr, & May. • Describe and identify objects in the environment using geometric shape names. Addressed in Sept., Nov., and Dec. • Developing concept/skill - Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. This reappears in Oct., Dec.., Jan., Feb., Mar., Apr., & May. **Writing and Enrichment:** • *Home Connection* p. 25 and *Home Connection* tab pp. 139-141.
Module 2- Session 1: I Spy		
K.CC.1 **K.G.1** K.G.2 K.G.3 **K.G.4** K.G.5	**Access Prior Learning and Connections to Future Learning:** • Model two-dimensional shapes in the world by drawing them, describe and identify objects in the environment using geometric shape names, analyze and compare two-dimensional shapes and use informal	**Guiding Questions:** • What shapes can we see in our world? Where can I find shapes around my world? • How can a shape be described? • What questions can I ask to find out what shape it is quickly? **Instructional Notes:** • Visual models are various clear models of 2-D and 3-D shapes. • Step 3 - Paper is not a flat object. ***-continues on next page-***

MP.1 **MP.6** **MP.7**	language to describe their parts and attributes and identify shapes regardless of orientation or size are all reinforces from *Unit 5*. **Developing and securing the Big Idea and key Strategic Behaviors:** • classifying shapes • **identifying shapes by their defining attributes (2-and 3-D)** • **analyzing shapes** **Secure:** • naming shapes	• Step 4 & 7 - Due to developing fine motor abilities and visual-spatial reasoning, drawing 3-D shapes on boards may be challenging or frustrating. Consider skipping these steps or preparing students for mistakes. Use revised shape songs in Step 4 if needed. • Step 5 - Consider placing cut out shapes and 3-D shapes in various places around the room. When the students, spy the shape, discuss it and place it in a shape museum for students explore. Ensure you have actual 2-D and 3-D models around the room. Can you spy a round object that tells time that I can use to make a 2-D shape? • Block play to explore 3-D shapes is highly recommended. Pose questions to guide academic play and discuss how shapes are used to build structures. **Number Corner Connections:** • Expected to be secure - Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to. Months Sep., Nov., and Dec. feature this concept. • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. This is also addressed in Sept. and Nov. months. • Identify shapes regardless of orientation or size (addressed in Sept. and Nov. months).
Module 2- Session 2: Two-Dimensional & Three Dimensional Shapes Bingo		
K.CC.2 K.G.1 K.G.2 **K.G.3** **K.G.4** K.G.5 MP.1 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes and identify shapes regardless of orientation or size are reinforced from *Unit 5*. **Developing and securing the Big Idea and key Strategic Behaviors:** • **drawing shapes** **Developing to Secure:** • classifying shapes • **identifying shapes by their defining attributes (2 and 3-D)** • **analyzing shapes** **Secure:** • naming shapes	**Guiding Questions:** • What are attributes or properties of a shape? • How are shapes alike and different? What makes shapes different from each other? **Instructional Notes:** • Visual models are Geoblocks, • For beginners in geometry, identifying a 3-D object by viewing a 2-D sketch of the 3-D object is a more challenging skill. More scaffolding is needed here, and teachers might provide more experiences with actual solids that can be held and manipulated by students. • Step 3 and 8 – consider having a student find the shape in the room (having actual Geoblock available) rather than having students drawing shapes. • Consider giving each child a Bingo board. • Digital display tool found on the Bridges web site. **Number Corner Connections:** • Expected to be secure - Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. This is also addressed in Sept. and Nov. months. • Identify shapes regardless of orientation or size is addressed in Sept. and Nov. months. **Writing and Enrichment:** • *Home Connection* p. 10 and *Home Connection* tab pp. 143-147.
Module 2- Session 3: Introducing Work Place 6A Build Two Shapes		
K.CC.2 K.CC.4a K.CC.4b K.G.2 K.G.4 **K.G.5** MP.1 MP.6 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Model 3-D shapes in the world by building them is reinforced from *Unit 5*. • Read numbers for 0 to 20 and count up to 20 objects to answer "how many?" is addressed in *Units 1, 2, 3, 4, & 7*. **Developing the Big Idea and key Strategic Behaviors:** • **constructing shapes** **Developing to Secure:** • classifying shapes • identifying shapes by their defining attributes (2-D and 3-D) • analyzing shapes **Secure:** • naming shapes	**Guiding Questions**: • Are the square polydrons really squares? • What are similarities and differences between triangle polydron pieces and triangles? • How can I use polydrons to build objects that look similar to 3-D shapes I know? **Instructional Notes:** • Visual models are Geoblocks, 3-D shape display cards, and polydrons. • Note: Polydron sides are not straight, so be careful when using them to build 3-D shapes. • Consider having the actual geoblocks available along with the 3-D shapes cards. **Number Corner Connections:** • Expected to be secure - Model 3-D shapes in the world by building them. Explored in Nov. • Count up to 20 objects to answer how many? Addressed in Feb. through May. Read numbers for 0 to 20. Reappears in all months. **Writing and Enrichment:** • Other shapes could be built and considered for "winning" in this *Work Place*, such as a pyramid or a hexagonal prism. • See *Teacher Masters* (M2 S3 p. T4) of the *Work Place Guides for Differentiation* ideas. • Optional *Unit 6 Work Place Log* available on p. T6.

Module 2: Session 4: Introducing Work Place 6B What's My Rule? (optional)

K.MD.3 K.G.1 K.G.2 K.G.3 **K.G.4** **K.G.5** MP.1 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Model two-dimensional shapes in the world by drawing them is reinforced from *Unit 5*. • Describe and identify objects in the environment using geometric shape names, analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes, and identify shapes regardless of orientation or size are all reinforced from *Unit 5*. **Developing and securing the Big Idea and key Strategic Behaviors:** • classifying shapes • identifying shapes by their defining attributes (2-D and 3-D) • analyzing shapes **Secure:** • naming shapes	**Guiding Questions**: • What shapes can we see in our world? • How can we sort shapes? How can a shape be described? **Instructional Notes:** • **Consider using one of the WCSD Additional *Work Places* instead of this lesson.** These are posted in the Kindergarten Teacher Community on Microsoft Teams (General Channel, Kinder Files, Bridges folder). **Use time for free exploration with shapes, completing the assessment and *Work Places*.** • A soda can is not a cylinder. Note previous comments. • Plate is not a circle, Use actual 2-D images for this activity. • Suggestions for Steps 7-9 - Ask students what rule did you use to sort the objects? Are we sorting objects by how many corners? Faces? 2-D? 3-D? Roll? Stack? Slide? **Number Corner Connections:** • Expected to be secure - Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to. Months Sep., Nov., and Dec. feature this concept. • Analyze and compare two-dimensional shapes and use informal language to describe their parts and attributes. This is also addressed in Sept. and Nov. months. • Identify shapes regardless of orientation or size is addressed in Sept. and Nov. months. **Writing and Enrichment:** • See *Teacher Masters* (M2 S4 p. T7) of the *Work Place Guides for Differentiation* ideas. **Child Watching and Assessments:** • **Three Dimensional Shapes & Their Attributes Checkpoint –** observe students in *Work Places* (see p. 18 and T9). Also see reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab p. 66.

Module 2- Session 5: Introducing Work Place 6C Make It Five

K.CC.4 K.CC.5 **K.OA.3** K.OA.5 MP.1 **MP.2** MP.7	**Access Prior Learning and Connections to Future Learning:** • Identify shapes regardless of orientation or size was addressed in *Unit 5*. • Decompose numbers less than or equal to 10 into pairs into more than one way and record is covered in all units except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is covered in *Units 2, 3, 4, 7 & 8.* **Beginning with the Big Idea and key Strategic Behaviors:** • writing equations **Developing:** • **composing and decomposing** • **modeling addition with objects and pictures** **Secure:** • using the five-structure	**Guiding Questions**: • How can I find the total when I put two quantities together? • Why is it important that I can build the number combinations for the number 5? How many ways are there to make 5 using two spins? 3 spins? 4 spins? **Instructional Notes:** • Visual models are cubes and shape pictures. • *Work Place* may not be an independent *Work Place* without further support. • Focus here is on making fives. • Digital display tool link found on the Bridges web site. **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Explored in Dec.-May. • Expected to be secure - Identify shapes regardless of orientation or size is addressed in Sept. and Nov. months. **Writing and Enrichment:** • See *Teacher Masters* (M2 S5 p. T10) of the *Work Place Guides for Differentiation* ideas • See *Work Place Instructions* (p. T11) for game variations. • *Home Connection* p. 21 and *Home Connection* tab p. 149-152.

Module 3- Session 1: Mystery Numbers, Day 1

K.CC.1 **K.CC.3** **K.CC.4c** K.CC.5 K.CC.6 **K.NBT.1**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers from 11 to 19 into a group of 10 and some 1s only in this unit. • Read numbers for 0 to 20 is reinforced from *Units 1, 2, 3, 4, and 7.*	**Guiding Questions:** • What is an efficient way to count an amount greater than ten? • What is a useful strategy for counting teen numbers? How can numbers be represented? ***-continues on next page-***

MP.1 **MP.2**	**Beginning with the Big Idea and key Strategic Behaviors:** • **using the ten-structure** • **composing/decomposing within 20** • counting on **Developing:** • understanding hierarchical inclusion within 20 **Secure:** • understanding cardinality • subitizing • using the five-structure	**Instructional Notes:** • Visual models are double ten-frame five-wise display cards, ten & more numeral display cards, fingers, and written numerals. • Allow students time to be successful in the problem solving. **Number Corner Connections:** • Developing concept/skill - Decompose numbers from 11 to 19 into a group of 10 and some 1s. This concept is featured in all months except Jan. and May. • Expected to be secure - Read numbers for 0 to 20. Covered in all months.
Module 3- Session 2: Mystery Numbers, Day 2		
K.CC.2 **K.CC.3** **K.CC.4c** K.CC.5 K.CC.6 **K.NBT.1** **MP.1** **MP.2**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers from 11 to 19 into a group of 10 and some 1s only in this unit. • Read numbers for 0 to 20 is reinforced from *Units 1, 2, 3, 4, and 7.* **Beginning work with the Big Idea and key Strategic Behaviors:** • **using the ten-structure** • **composing/decomposing within 20** • using counting on **Developing:** • using hierarchical inclusion within 20 **Secure:** • understanding cardinality • subitizing • using the five-structure	**Guiding Questions:** • What is an efficient way to count an amount greater than ten? • What is a useful strategy for counting teen numbers? How can numbers be represented? **Instructional Notes:** • Visual models are double ten-frame five-wise display cards, ten & more numeral display cards, fingers, and written numerals. • Allow students time to be successful in the problem solving. **Number Corner Connections:** • Developing concept/skill - Decompose numbers from 11 to 19 into a group of 10 and some 1s. This concept is featured in all months except Jan and May. • Expected to be secure - Read numbers for 0 to 20. Covered in all months. **Writing and Enrichment:** • *Home Connections* p. 10 and *Home Connection* tab pp. 153-154.
Module 3- Session 3: Introducing Work Place 6D; Roll, Add & Compare		
K.CC.2 K.CC.5 **K.CC.6** **K.OA.2** **K.OA.3** MP.1 **MP.2** **MP.4**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs into more than one way and record is covered in all *Units* except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is covered in *Units 2, 3, 4, 7 & 8.* • Adds with sums to 10 is addressed in Units 4, 7, and 8. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*.	**Guiding Questions:** • How can I use models to represent addition? • Does the order of addends change the sum? • What happens when I join quantities together? **Instructional Notes:** • Visual models are 0-5 number dice, cubes, and equation recording sheets. • Note Math Practices sidebar note p.13 for focus support. **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions • Add with sums to 10. Addressed in months Jan.-May. • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. This appears in Oct., & Dec- May. • Expected to be secure - Read numbers for 0 to 20. Covered in all months. **Writing and Enrichment:** • See *Teacher Masters* (M3 S3 p. T1) of the *Work Place Guides for Differentiation* ideas. ***-continues on next page-***

	• Read numbers for 0 to 20 is reinforced from *Units 1, 2, 3, 4, 7.* **Developing the Big Idea and key Strategic Behaviors:** • counting on • **composing and decomposing within 10** • **counting 3 times when adding** **Secure:** • understanding cardinality • reading numbers to 20 • comparing within 10 (magnitude)	
Module 3- Session 4: A Dime & Some Pennies		
K.CC.1 K.CC.3 **K.NBT. 1** MP.1 MP.2 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs into more is covered in all units except *Unit 4*. • Read numbers for 0 to 20 is reinforced from *Units 1, 2, 3, 4, 7.* **Developing the Big Idea and key Strategic Behaviors:** • counting on • **using the ten-structure** **Secure:** • understanding cardinality • subitizing	**Guiding Questions:** • How can I use models to represent addition? How can I compare one quantity to another? • Does the order of addends change the sum? • What happens when I join quantities together? **Instructional Notes:** • Visual models are dimes and pennies. • Consider spreading this *Session* over two days. • Consider adding this *Session* as an additional *Work Place.* **Number Corner Connections:** • Developing concept/skill - Decompose numbers from 11 to 19 into a group of 10 and some 1s. This concept is featured in all months except Jan. and May. • Expected to be secure - Read numbers for 0 to 20. Covered in all months.
Module 3- Session 5: Tens & Ones Checkpoint		
K.CC.3 K.CC.7 **K.NBT. 1** K.OA.4 MP.1 MP.2 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers from 11 to 19 into a group of 10 and some 1s is only in this *Unit*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. • Read numbers for 0 to 20 and count up to 20 objects to answer "how many?" is reinforced from *Units 1, 2, 3, 4, 7*. **Developing the Big Idea and key Strategic Behaviors:** • counting on • **using the ten-structure**	**Guiding Questions:** • What is an efficient way to count an amount greater than ten? • What is a useful strategy for counting teen numbers? Why is counting important? • How can numbers be represented? **Instructional Note:** • Visual models are dimes and pennies. **Number Corner Connections:** • Developing concept/skill - Decompose numbers from 11 to 19 into a group of 10 and some 1s. This concept is featured in all months except Jan. and May. • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. This reappears in Oct., Dec.., Jan., Feb., Mar., Apr., & May. • Expected to be mastered/secured - Read numbers for 0 to 20. Explored in all months. • Count up to 20 objects to answer how many? Addressed in Feb.-May months. **Writing and Enrichment:** *Home Connections* p. 21 and *Home Connection* tab pp. 155-161. **Child Watching and Assessment:** • ***Optional at this time:*** **Tens & Ones CHECKPOINT –** this is the first complete written assessment of the year; teacher works with whole group (see pp. 20-21 and T5-T6). Also see scoring and reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab pp. 69-70. • Consider using this assessment aa a teacher-led *Work Place* or as an optional/additional *Home Connection.*

Module 4- Session 1: Shake Those Beans Five, Six, and Seven		
K.CC.5 **K.OA.1** K.OA.2 **K.OA.3** MP.1 **MP.2** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs into more than one way and record is reinforced from all *Units* except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is reinforced from *Units 2, 3, 4, 7 & 8*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • counting on • **composing and decomposing within 10** **Secure:** • understanding cardinality • **subitizing** • **using the five-structure** • using hierarchical inclusion • comparing within 10	**Guiding Questions:** • Does the order of addends change the sum? • What happens when I join quantities together? • How can I use models to represent addition? • How many ways are there to make 5, 6, or 7 using two addends? **Instructional Note:** • Visual models are red and white beans, graphs, and written equations. **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Also explored in Dec-May. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May.
Module 4- Session 2: Unifix Trains & Equations Five, Six, and Seven		
K.OA.1 K.OA.2 **K.OA.3** K.OA.5 MP.1 **MP.2** **MP.7**	**Access Prior Learning and Connections to Future Learning**: • Decompose numbers less than or equal to 10 into pairs into more than one way and record is reinforced from all *Units* except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is reinforced from *Units 2, 3, 4, 7 & 8*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • counting on • **composing and decomposing within 10** **Secure:** • understanding cardinality • **subitizing** • **using the five-structure** • using hierarchical inclusion • comparing within 10	**Guiding Questions:** • Does the order of addends change the sum? • What happens when I join quantities together? • How can I use models to represent addition? • How many ways are there to make 5, 6, or 7 using two addends? **Instructional Note:** • Visual models are cubes, graphs, and written equations. **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Explored in Dec-May. • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. It reappears in Oct., & Dec.-May. **Writing and Enrichment:** • Consider using 8, 9, and 10 recording sheets/cubes for students who are secure in using the five-structure. • *Home Connection* p. 13 and *Home Connection* tab pp. 163-167.

Module 4- Session 3: Fill It Up Five +		
K.CC.5 **K.OA.1** **K.OA.2** **K.OA.3** **MP.1** **MP.2** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs into more than one way and record is reinforced from all *Units* except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is reinforced from *Units 2, 3, 4, 7 & 8*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • counting on • **composing and decomposing within 10** **Secure:** • understanding cardinality • **subitizing** • **using the five-structure** • using hierarchical inclusion • comparing within 10	**Guiding Question:** • How can benchmark numbers help me when adding? **Instructional Note:** • Visual models are 0-5 number die, red and white ten-frame display cards, and graphs. **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Explored in Dec.-May. • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May.
Module 4- Session 4: Number Stations, Day 1		
K.CC.5 K.OA.1 K.OA.2 K.OA.3 **MP.1** **MP.2** **MP.4** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs into more than one way and record is reinforced from all *Units* except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is reinforced from *Units 2, 3, 4, 7 & 8*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • counting on • **composing and decomposing within 10** **Secure:** • understanding cardinality • **subitizing** • **using the five-structure** • using hierarchical inclusion	**Guiding Question**: • How can benchmark numbers help me when adding? **Instructional Notes:** • Visual models are 0-5 dice, red and white beans, cubes, and red and white ten-frame display cards. • Consider observing students during *Number Stations* to assess skills and strategies reported on the Kindergarten Progress Report. **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Featured in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Explored in Dec.-May. • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May.

Module 4- Session 5: Number Stations, Day 2		
K.CC.5 K.OA.1 K.OA.2 K.OA.3 MP.1 **MP.2** MP.7	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs into more than one way and record is reinforced from all *Units* except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is reinforced from *Units 2, 3, 4, 7 & 8*. • Identify whether the number of objects in one group is greater, less, or equal to the number objects in another group reappears in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • counting on • **composing and decomposing within 10** **Secure:** • understanding cardinality • **subitizing** • **using the five-structure** • using hierarchical inclusion	**Guiding Question**: • How can I use different combinations of numbers to represent the same quantity? **Instructional Notes:** • Visual models are 0-5 dice, red and white beans, cubes, red and white ten-frame display cards, and written equations. • Consider observing students during *Number Stations* to assess skills and strategies reported on the Kindergarten Progress Report. • Consider using these *Number Stations* as additional *Work Places.* **Number Corner Connections:** • Developing concept/skill - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Addressed in Dec.-May. • Identify whether the number of objects in one groups is greater, less, or equal to the number objects in another group. It reappears in Oct., Dec., Jan., Feb., Mar., Apr., & May. **Writing and Enrichment:** • *Home Connection* p. 23 and *Home Connection* tab p. 169-171.

References

Battista, M. T. (2012). *Cognition-based assessment & teaching of geometric shapes*: B*uilding on students' reasoning.* Portsmouth, NH: Heinemann.

Boaler, J. (2016). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages, and innovative teaching.* San Francisco, CA: Jossey-Bass & Pfeiffer Imprints.

Boaler, J. (n.d.). *Seeing as understanding: The importance of visual mathematics for our brain and learning.* Retrieved March 15, 2019, from https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/Visual-Math-Paper-vF.pdf

Carpenter, T., Fennema, E., Loef Franke, M., Levi, L., Empson, S.B. (2015). *Children's mathematics: Cognitively guided instruction* (2nd ed.). Portsmouth, NH: Heinemann.

Chapin, S. H., & Johnson, A. (2006). *Math matters: Understanding the math you teach, Grades K-8.* Sausalito, CA: Math Solutions Publications.

Council of Chief State School Officers. (2010). The Nevada Academic Content Standards. Retrieved from http://www.doe.nv.gov/uploadedFiles/nde.doe.nv.gov/content/Standards_Instructional_Support/Nevada_Academic_Standards/Math_Documents/mathstandards.pdf.

Common Core Standards Writing Team. (2015, March 6). *Progressions for the Common Core State Standards in Mathematics (draft). Grades K-5, Number and Operations in Base Ten.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Fosnot, C. T., & Dolk, M. (2001). *Young mathematicians at work: constructing number sense, addition, and subtraction*. Portsmouth, N.H.: Heinemann.

Fosnot, C. T., & Dolk, M. (2001). Landscape of learning. Retrieved from: http://www.contextsforlearning.com/samples/k3LandscapeofLearning.pdf

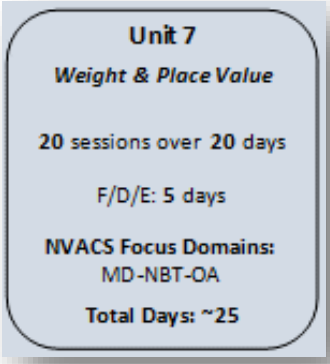
Van de Walle, J.A., Karp, K.S., & Bay-Williams, J.M. (2016). *Elementary and middle school mathematics: Teaching developmentally*. Boston, MA: Pearson.

Van de Walle, J., Karp, K., Lovin, L., & Bay-Williams, J. (2014). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades Pre-K-2* (2nd ed.). Boston, MA: Pearson.

Kindergarten Unit 7: Weight & Place Value

Big Conceptual Idea: K-5 Progression on Number and Operations in Base Ten (pp. 1-5), K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking (pp. 1-11), K-5 Progression on Measurement and Data (Measurement Part) (pp. 1-4, 6-7), K-5 Progression on Measurement and Data (Data Part) (pp. 1-5)

***Read the Bridges Unit Overview/Introduction for Unit 7 pp. i-vi. Also read each Module Overview for the current week's sessions and the current Session Summary**, along with details for the teaching of each session, as you work through Unit 7. These Introduction/Overview/Summary sections provide focus, clarity, vocabulary, definitions, and examples for the "big mathematical ideas and understandings" critical to Kindergarten. This information will support your professional decision-making within the Modules and Sessions as needed.*



Kindergarten Curriculum Pacing Framework: Balanced Calendar

Mathematical Background: Read Bridges *Unit 7 Overview* and *Introduction* (pp. i-vi)	**Unit Essential Questions for the Teacher:** How do I encourage students to use what they know about the number 5 as they are developing number understanding within 10 and then with 10 ones and some more ones? How do I support understanding of measurement with continuous attributes? How do I support students' early strategies in addition and subtraction?

Instructional note:

In *Unit 7* students' use of 5 as a landmark and sub-base is a critical foundation for the understanding of **place value**. Understanding of 5 (being able to visually and mentally manipulate the quantity of 5 and the numbers within 5) is also beginning evidence of *Mathematical Practice 7: Look for and make use of structure* (NVACS, 2010, p. 8). As students developmentally and intentionally move into numbers within 10, and then 10 ones and some more ones, confirm they are making mathematical connections from understanding of quantities when working with various contexts, materials and models.

The *K-5 Progression on Number and Operations in Base Ten* states, "In Kindergarten, teachers help children lay the foundation for understanding the base-ten system by drawing special attentions to 10. Children learn to view the whole numbers 11 through 19 as ten ones and some more ones" (p. 5). **Do not move too quickly into procedural writing of number equations.** Instead, continue to encourage the building of solid synaptic connections through deep exploration with visual models. Students will use ten-frames, double ten-frames, trains of cubes, bundles of sticks, number lines, drawings, and equations as they develop an understanding of working with 10s and some more 1s.

When composing and decomposing numbers from 11-19 and when moving away from counting by 1s during addition and subtraction situations, students are encouraged to use a variety of strategies, such as subitizing, using fingers, counting on, counting backward, using the 1-9 sequence, using doubles, using known facts, skip counting, etc. for quick recognition of parts of numbers (Fosnot, 2001). See *Unit 7 Introduction* p. iv for suggestions of strategic behaviors to watch for in early addition and subtraction. *Table 1. Common addition and subtractions situations* (NVACS, 2010, p.88) also provides support for the development of addition and subtraction.

As students learn to recognize, describe, and compare various continuous attributes, the **measurement** of weight (which has non-geometric attributes like mass, capacity, time, and color) is introduced. Weight, however, is not a focus for mathematics in kindergarten; see *K-5 Progression on Measurement and Data (Measurement Part)* linked above. The *Unit* activities do give students opportunity, though, to revisit the critical ideas of interval counting, continuous attributes, units, indirectly comparing objects using numbers, estimating, and equality in comparisons. All of these were focused on in *Unit 4*, and all are critical to the understanding of fractional parts in later grades.

The mathematics content of *Unit 7*:

Children construct understandings in connected and integrated ways, not as isolated, individual pieces. Therefore, continually ask students to explain how they are problem solving ("How did you know?", "What made you think that?", etc.) so you can make explicit the connections students are already making from previous learning, strengthen the synaptic connections being constructed, and encourage the continuance of this sense-making behavior (NVACS, 2010, p. 6).

- Support and instruct to the development of the new **big mathematical ideas** of:
  - **Measurement** (weight and capacity)
  - **Representing and solving addition and subtraction problems** with objects, drawings or equations
- Watch for students' attempts at thinking about and using these new **strategic behaviors/strategies** to demonstrate their emerging understandings of the big mathematical ideas:
  - **Describing weight**

- **Describing capacity**
- **Creating and extending patterns**
- **Drawing equations**
- **Direct modeling**
- **Counting on**

Over time, with supportive and scaffolded instruction and interactions, students come to a more precise understanding of measurement and place value, as well as develop appropriate precision with mathematics content and vocabulary. Intentionality with the context and range of numbers students work with supports number sense development and expansion.

On-going enrichment:

- Take note of the ***Skills Across the Grade Level*** chart in the *Introduction* section (*Unit 7*, pp. v-vi). This chart shows the extent and expectation of the development of Standards within the *Unit* and other *Units* or *Number Corner Workouts.* This information supports your professional decision-making for instruction, intensification and intervention.
- Expect all students to engage in the problem solving and in explaining and justifying their thinking.
- Use Table 1 in the Nevada Academic Content Standards (NVACS) titled "Common addition and subtraction situations" (p. 88) to think about intensification and acceleration.

Essential Academic Vocabulary Use these words consistently during instruction.			
Essential Academic Vocabulary: (first time explicitly taught) *indicates *Word Resource Cards* are available in the materials	**Review Vocabulary:** (Vocabulary from *Number Corner* or prior *Units*)		
weight*	*zero* *numeral* *number** *equal** *heavy/heavier/heaviest** *light/lighter/lightest**	*after** *before** *greater than** *ones** *tens**	*less than** *more** *less** *measure* *estimate**

Additional terminology that students may need support with: strategies, in all, minus, plus, combinations, actual, greater, different, same, compare*

Standards listed in **bold** indicate a focus of the lesson.

NVACS (Content and Practices)	Mathematical Development of the Big Idea	Instructional Clarifications & Considerations
Module 1- Session 1: Compare Weights		

K.CC.1
K.MD.1
K.MD.2
K.MD.3
 	
MP.1
MP.5
MP.7
	Access Prior Learning and Connections to Future Learning:
	• Describe measurable attributes of objects, such as length or weight; directly compare two objects with a measurable attribute in common to see which object has "more of"/"less of" the attribute, and describe the difference; and compare weights are all covered only in this *Unit*. (The CCSS does not differentiate between weight and mass.)
	
	Developing the Big Idea and key Strategic Behaviors:
	• **describing and comparing weight**
	
	Secure:
	• counting
		Guiding Questions:
		• How can I compare 2 objects by weight?
		• How does a balance scale help us tell if an object is heavier or lighter?
		• Does an object's size affect its weight? Does bigger always mean heavier?
		
		Instructional Note:
		• Visual models are balance scale and objects to measure weight.
		
		Literature Connection:
		• *Mighty Maddie* by Stuart J Murphy
		
		Number Corner Connections:
		• Expected to be secure:
		  • Describe measurable attributes of objects, such as length or weight.
		  • Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.
		
		Writing and Enrichment:
		• In journals or on paper make a t-chart to record the heavy and light sort during the *Problems & Investigation* session (can be recorded with pictures or word).
		• Show the class a beach ball and baseball. Ask students to list all the ways they can compare and measure these 2 objects. Then, ask students to compare them by weight. Have students explain which weighs more in writing. Pose the question for a written response: Does bigger always mean heavier? (beach ball/tennis ball) Why? Can also extend the discussion to comparison between baseball and tennis ball.
		• Optional *Unit 7 Work Place Log* available on p. T5

Module 1- Session 2: A Pound of Potatoes

K.CC.1
K.MD.1
K.MD.2
K.MD.3
 	
MP.1
MP.5
MP.7
	Access Prior Learning and Connections to Future Learning:
	• Describe measurable attributes of objects, such as length or weight; directly compare two objects with a measurable attribute in common to see which object has "more of"/"less of" the attribute, and describe the difference; and compare weights are all covered only in this *Unit*. (The CCSS does not differentiate between weight and mass.)
	
	Developing the Big Idea and key Strategic Behaviors:
	• **describing and comparing weight**
	
	Secure:
	• counting
		Guiding Questions:
		• How can I compare 2 objects by weight?
		• How does a balance scale help us tell if an object is heavier or lighter?
		• If I wanted to pick something up, what would I want to know about what I was going to lift?
		
		Instructional Notes:
		• Visual models are a balance scales, potatoes, other objects to measure weight, and recording sheet visual.
		• Students are problem solving heavier and lighter.
		• The lesson focuses on the comparison in weight using a pound of potatoes. Lesson might be adapted to have students find things that weigh as much as an apple, tennis ball, water bottle, baseball, or small block.
		
		Literature Connections:
		• *Mighty Maddie* by Stuart J Murphy
		• *Balancing Act* by Ellen Stoll Walsh
		
		Number Corner Connections:
		• Expected to be secure at this time:
		  • Describe measurable attributes of objects, such as length or weight. Explored in April.
		  • Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. Explored in Nov. and Apr.
		
		Writing and Enrichment:
		Using a balance scale what objects can you find that weigh as much as a tennis ball?
		• Bridges Resource Digital Pan Balance found on the Bridges web site.
		• *Home Connection* p. 10 and *Home Connection* tab pp. 173-175

Module 1- Session 3: Introducing Work Place 7A Spin & Compare Weights

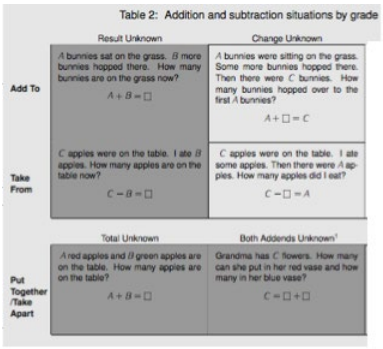
K.CC.1
K.MD.1
K.MD.2
K.MD.3
 	
MP.1
MP.5
MP.7
	Access Prior Learning and Connections to Future Learning:
	• Describe measurable attributes of objects, such as length or weight; directly compare two objects with a measurable attribute in common to see which object has "more of"/"less of" the attribute, and describe the difference; and compare weights are all covered only in this Unit. (The CCSS does not differentiate between weight and mass.)
	
	Developing the Big Idea and key Strategic Behaviors:
	• **describing and comparing weight**
	
	Secure:
	• counting
		Guiding Questions:
		• How can I compare 2 objects by weight?
		• How does a balance scale help us tell if an object is heavier or lighter?
		
		Instructional Notes:
		• Visual models are a balance scale and objects to measure by weight.
		• Digital display tool link (p.2) found on the Bridges web site.
		
		Literature Connection:
		• *Equal Shmequal* by Virginia Kroll
		
		Number Corner Connections:
		• Expected to be secure at this time:
		  • Describe measurable attributes of objects, such as length or weight. Explored in April.
		  • Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. Explored in Nov. and Apr.
		
		Writing and Enrichment:
		• See *Teacher Masters* (p. T3) of the *Work Place Guides for Differentiation* ideas
		• See *Work Place Instructions* (p. T4) for game variations

Module 1- Session 4: Measuring Handfuls

K.CC.1 K.CC.3 **K.CC.5** K.OA.3 **K.NBT.1** MP.1 **MP.2** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Count up to 20 objects arranged in a line, rectangular array or circle to answer "how many?" is reinforced from *Units 4 & 6*. **Developing the Big Idea and key Strategic Behaviors:** • **using estimation** • **using the ten-structure** **Secure:** • counting	**Guiding Questions:** • Is your handful closer to 10, 20 or 30? How do you know? • What is an efficient strategy for counting handfuls? **Instructional Note:** • Visual models are cubes and ten-frame recording sheet. **Number Corner Connections:** • Reviewed and extended to higher levels: Count up to 20 objects arranged in a line, rectangular array or circle to answer how many. Explored in Feb., Mar., & Apr. ***-continues on next page-***

		Writing and Enrichment: • Bridges Number Frame app: App: https://www.mathlearningcenter.org/resources/apps/number-frames Number Frames | The Math Learning Center • Number Frames help students structure numbers to 5, 10, 20, and 100. Students use the frames to count, represent, compare, and compute with numbers in a particular range. **Child Watching and Assessments:** • **Combinations to Five and Equations CHECKPOINT** – work individually with students (see p. 17 and T6). Also see scoring and reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab pp. 76-77.
Module 1- Session 5: Introducing Work Place 7B Measuring Handfuls		
K.CC.1 K.CC.3 **K.CC.5** K.OA.3 **K.NBT.1** MP.1 **MP.2** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Count up to 20 objects arranged in a line, rectangular array or circle to answer "how many?" is reinforced from *Units 4 & 6*. **Developing the Big Idea and key Strategic Behaviors:** • **using estimation** • **using the ten-structure** **Secure:** • counting	**Guiding Questions:** • Is your handful closer to 10, 20 or 30? How do you know? • What is an efficient strategy for counting handfuls? **Instructional Notes:** • Visual models are cubes and recording sheets. • Students are problem solving with groups of 1, 2, 5 and 10 using the ten-frame mats. See the sidebar note on p. 21. • This *Work Place* may not be independent at this point. Teacher/adult support may be needed • Consider using a smaller manipulative such as a two-colored counter, counting bears, counting bugs, or smaller pattern blocks for small hands. • Digital display tool link found on the Bridges web site. **Literature Connection:** • *The Masloppy Family* by Catherine Twomey-Fosnot **Number Corner Connections:** • Reviewed or extended to higher levels - Count up to 20 objects arranged in a line, rectangular array or circle to answer how many. Explored in Feb., Mar., & Apr. **Writing and Enrichment:** • See *Teacher Masters* (p. T7) of the *Work Place Guides for Differentiation* ideas • See Work *Place Instructions* (p. T8) for game variations • *Home Connections* p. 22 and *Home Connection* tab pp. 177-179
Module 2- Session 1: Capture the Number, Ten to Twenty		
K.CC.1 **K.CC.5** **K.NBT.1** MP.1 MP.2 **MP.6**	**Access Prior Learning and Connections to Future Learning:** • Count up to 20 objects arranged in a line, rectangular array or circle to answer "how many?" is reinforced from *Units 4 & 6*. • Compose and decompose numbers from 11 to 19 into tens and ones is covered again in *Unit 8*. **Developing the Big Idea and key Strategic Behaviors:** • using the ten-structure **Secure:** • **comparing quantities** • recognizing magnitude	**Guiding Questions:** • How can I determine how much is on a double ten frame without counting each dot? • How can I use grouping to help me count? **Instructional Notes:** • Visual models are double ten-frame five-wise display cards and the number line. • Students are problem solving with more than, less than, and equal to. • Digital display tool link found on the Bridges web site **Literature Connection:** • *The Masloppy Family* by Catherine Twomey-Fosnot **Number Corner Connections:** • Reviewed or extended to higher levels - Count up to 20 objects arranged in a line, rectangular array or circle to answer how many. Explored in Feb., Mar., & Apr. • Developing - Compose and decompose numbers from 11 to 19 into tens and ones. Explored in Dec., Mar. & Apr.

Module 2- Session 2: Introducing Work Place 7C Capture the Number		
K.CC.1 K.CC.3 **K.CC.5** **K.CC.7** **K.NBT.1** MP.1 MP.2 **MP.6**	**Access Prior Learning and Connections to Future Learning:** • Count up to 20 objects arranged in a line, rectangular array or circle to answer "how many?" is reinforced from *Units 4 & 6*. • Compose and decompose numbers from 11 to 19 into tens and ones is covered again in *Unit 8*. **Developing the Big Idea and key Strategic Behaviors:** • using the ten-structure **Secure:** • **comparing quantities** • recognizing magnitude	**Guiding Questions**: • How can I determine how much is on a double ten frame without counting each dot? • How can I use grouping to help me count? **Instructional Notes:** • Visual models are double ten-frame five-wise cards and number line. • Digital display tool link: *Work Place* 7C Capture the Number (student version) found on the Bridges web site. **Literature Connection:** • *The Masloppy Family* by Catherine Twomey-Fosnot **Number Corner Connections:** • Reviewed or extended to higher levels - Count up to 20 objects arranged in a line, rectangular array or circle to answer how many. Explored in Feb., Mar., & Apr. • Developing - Compose and decompose numbers from 11 to 19 into tens and ones. Explored in Dec., Mar. & Apr. **Writing and Enrichment:** • See *Teacher Masters* (M2 S2 p. T1) of the *Work Place Guides for Differentiation* ideas • See *Work Place Instructions* (p. T2) for game variation • *Home Connection* p. 9 and *Home Connection* tab pp. 181-184
Module 2- Session 3: Double Top Draw		
K.CC.1 **K.CC.5** **K.CC.6** **K.NBT.1** MP.1 MP.2 **MP.7**	**Access Prior Learning and Connections to Future Learning**: • Count up to 20 objects arranged in a line, rectangular array or circle to answer "how many?" is reinforced from *Units 4 & 6*. • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is reinforced in all *Units*. • Compose and decompose numbers from 11-19 into tens and ones is covered in *Unit 8*. **Developing the Big Idea and key Strategic Behaviors:** • **using the ten-structure** • **recognizing 10s in teens** **Secure:** • using the five-structure • **comparing quantities**	**Guiding Questions:** • How can I determine how much is on a double ten frame without counting each dot? • How can I use grouping to help me count? **Instructional Notes:** • Visual models are double ten-frame pair-wise display cards and double ten-frame dot cards. • Students are problem solving with teen numbers. See sidebar notes p. 12 regarding use of the double ten-frames to support students' strategic behaviors. • Digital display tool link found on the Bridges web site. **Number Corner Connections:** • Reviewed or extended to higher levels - Count up to 20 objects arranged in a line, rectangular array or circle to answer how many. Explored in Feb., Mar., & April. • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group. Explored in Oct., Dec., Jan., Feb., Mar., Apr., & May. • Developing - Compose and decompose numbers from 11 to 19 into tens and ones. Explored in Dec., Mar. & Apr.
Module 2- Session 4: Introducing Work Place 7D Double Top Draw		
K.CC.5 **K.CC.6** K.NBT.1 MP.1 MP.2 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Count up to 20 objects arranged in a line, rectangular array or circle to answer "how many?" is reinforced from *Units 4 & 6.* • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is reinforced in all *Units.* • Compose and decompose numbers from 11 to 19 into tens and ones is covered again in *Unit 8*. ***-continues on next page-***	**Guiding Questions:** • How can I determine how much is on a double ten frame without counting each dot? • How can I use grouping to help me count? **Instructional Note:** • Visual models are double ten-frame cards. **Number Corner Connections:** • Reviewed and extended to higher levels - Count up to 20 objects arranged in a line, rectangular array or circle to answer how many. Explored in Feb., Mar., & Apr. • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group. Explored in Oct., Dec., Jan., Feb., Mar., Apr., & May. • Developing - Compose and decompose numbers from 11 to 19 into tens and ones. Explored in Dec., Mar. & Apr. **Writing and Enrichment:** • See *Teacher Masters* (M2 S4 p. T7) of the *Work Place Guides for Differentiation* ideas • See *Work Place Instructions* (p. T8) for game variations

	Developing the Big Idea and key Strategic Behaviors: • **using the ten-structure** • **recognizing 10s in teen numbers** **Secure:** • using the five-structure • **comparing quantities**	
Module 2- Session 5: Greater Than? Less Than? Equal To?		
K.CC.6 **K.CC.7** MP.1 **MP.2** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is reinforced in all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • comparing greater than, less than, equal to	**Guiding Question:** • How can I compare numbers using a number line? **Instructional Notes:** • Visual models are the number line and number cards. • Digital display tool link found on the Bridges web site. **Number Corner Connections:** • Reviewed and extended to higher levels - Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group. Explored in Oct., Dec., Jan., Feb., Mar., Apr., & May. **Writing and Enrichment:** • Note the SUPPORT and CHALLENGE ideas on p. 19 for differentiation ideas • *Home Connection* p. 20 and *Home Connection* pp. 185-186
Module 3- Session 1: Story Problems, Part 1		
K.CC.5 K.CC.6 **K.OA.1** **K.OA.2** K.OA.4 K.OA.5 **MP.1** MP.2 MP.3 **MP.4** **MP.5**	**Access Prior Learning and Connections to Future Learning:** • Represent addition with objects, fingers, verbal explanations, expressions and equations is covered in *Units 2,4,6,7*, and *8.* • Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem is also covered in *Unit 6*. • Working with equal groups of objects by pairing objects or counting them by 2s problem type is not mastered until second grade. **Developing the Big Idea and key Strategic Behaviors:** • recognizing equivalence • **understanding part/whole relationships between addition and subtraction** • **representing thinking** **Secure:** • sense making	**Guiding Questions:** • How can I solve and represent problems using objects, pictures, words, and numbers? • How can strategies help us solve problems? How do you know when your answer makes sense? • How can you model a math problem with objects and pictures? **Instructional Notes:** • Visual models are ten-frames, pictures, and manipulatives. • *Frogs Picture Problem 1* is for exploration only. This is a multiplication or repeated addition NVACS problem type of Equal groups, Number of groups unknown. • *Frogs Picture Problem 2* is more accessible for kindergarteners. It is a Put together, Total unknown problem type. • *Frogs Picture Problem 3* is a Take from, Result unknown problem type; however, both the change and the result are not indicated, leaving multiple responses as accurate.  Table 2: Addition and subtraction situations by grade • **Optional:** As appropriate in *Sessions 1, 2,* and *3* of this *Module,* consider providing your own materials for this lesson by using a piece of blue construction paper for the pond, a strip of brown construction paper for the log and manipulatives to represent the frogs. Present students with problem types within the Kindergarten expectations indicated on the chart above such as: **Add to** – "There are 4 frogs in the pond. Three more frogs jump into the pond. How any frogs are in the pond now?" **Take from** – "There are 10 frogs sitting on the log. 4 frogs jump into the pond. How many frogs are left on the log?" **Put together/Take apart** – (see Problem 2) "There are 3 frogs on the log and 4 frogs in the pond. How many frogs are there in all?" Also, "There are 8 frogs in all. 5 of the frogs are in the pond and the rest of the frogs are on the log. How many frogs are on the log?" • **Optional:** Consider using Bridges problem types in *Session 1, 2,* and *3* as enrichment or challenge problems for students. • The referenced chart can be viewed here: K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking (p. 9). • Consider spending time engaging in discussion around explanations/justifications around one problem rather than glossing over all three problems. • Digital display support link on the Bridges web site **Literature Connection:** • *Frogs* by Gail Gibbons (builds background knowledge) ***-continues on next page-***

		Number Corner Connections: • Dec. – May *Number Corner* months explore representing addition in various ways. • Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem is a developing concept. This concept is also explored in Jan., Mar., and May.
Module 3- Session 2: Story Problems, Part 2		
K.CC.5 K.CC.6 **K.OA.1** **K.OA.2** K.OA.4 K.OA.5 **MP.1** MP.2 MP.3 **MP.4** **MP.5**	**Access Prior Learning and Connections to Future Learning:** • Represent addition with objects, fingers, verbal explanations, expressions and equations is covered in *Units 2,4,6,7,* and *8*. • Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem is also covered in *Unit 6*. • Working with equal groups of objects by pairing objects or counting them by 2s problem type is not mastered until second grade. • Work with compare problem types is not mastered until first grade. **Developing the Big Idea and key Strategic Behaviors:** • recognizing equivalence • **using part/whole relationships between addition and subtraction** • **representing thinking** **Secure:** • sense making	**Guiding Questions:** • How can I solve and represent problems using objects, pictures, words, and numbers? • How can strategies help us solve problems? How do you know when your answer makes sense? • How can you model a math problem with objects and pictures? **Instructional Notes:** • Visual models are ten-frames, pictures and manipulatives. • *Frogs Picture Problem 4* is for exploration only. This is a NVACS problem type of Compare, Difference unknown. • *Frogs Picture Problem 5* is for exploration only. This is a multiplication or repeated addition NVACS problem type of Equal groups, Number of groups unknown. • **Optional:** As appropriate in *Sessions 1, 2,* and *3* of this *Module*, consider providing your own materials for this lesson by using a piece of blue construction paper for the pond, a strip of brown construction paper for the log and manipulatives to represent the frogs. Present students with problem types within the Kindergarten expectations indicated on the chart above such as: **Add to** – "There are 4 frogs in the pond. Three more frogs jump into the pond. How many frogs are in the pond now?" **Take from** – "There are 10 frogs sitting on the log. 4 frogs jump into the pond. How many frogs are left on the log?" **Put together/Take apart** – (see *Problem 2*) "There are 3 frogs on the log and 4 frogs in the pond. How many frogs are there in all?" Also, "There are 8 frogs in all. 5 of the frogs are in the pond and the rest of the frogs are on the log. How many frogs are on the log?" • **Optional:** Consider using Bridges problem types in *Sessions 1, 2,* and *3* as extension or challenge problems for students. • The referenced chart can be viewed here: K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking (p. 9). • Digital display tool link found on the Bridges web site. **Number Corner Connections:** • Dec. – May *Number Corner* months explore representing addition in various ways. • Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem is a developing concept. This concept is explored in Jan., Mar., and May. **Writing and Enrichment:** • Optional - *Home Connection* p. 12 and *Home Connection* tab pp. 187-189
Module 3- Session 3: Story Problems, Part 3		
K.CC.3 **K.OA.1** **K.OA.2** **MP.1** **MP.4** **MP.5**	**Access Prior Learning and Connections to Future Learning:** • Represent addition with objects, fingers, verbal explanations, expressions and equations is covered in *Units 2,4,6,7,* and *8*. • Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem is also covered in *Unit 6*. • Working with equal groups of objects by pairing objects or counting them by 2s problem type is not mastered until second grade.	**Guiding Questions:** • How can I solve and represent problems using objects, pictures, words, and numbers? • How can strategies help us solve problems? How do you know when your answer makes sense? • How can you model a math problem with objects and pictures? **Instructional Notes:** • Visual models are ten-frames, pictures and manipulatives. • *Problem 1* is for exploration only. This is a multistep problem. First, it is an NVACS Add to, Result unknown problem. The next step is an Equal groups, Unknown product problem type. • *Problem 2* is a multiplication or repeated addition NVACS problem type of Equal groups, Unknown product. • *Problem 3* is a multiplication or repeated addition NVACS problem type of Equal groups, Unknown product. ***-continues on next page-***

	• Work with compare problem types is not mastered until first grade. **Developing the Big Idea and key Strategic Behaviors:** • recognizing equivalence • **understanding part/whole relationships between addition and subtraction** **Secure:** • **identifying hierarchical inclusion**	• *Problem 4* is for exploration only. This is a multistep problem. Students are first introduced to the concept of part-whole relationships as they recognize that a set of 7 objects can be broken (decomposed) into smaller sub-sets (5 & 2, 4 & 3, 7 & 0, 6 & 1) and still remain the total amount of 7 (inclusion). Then, students work with the number sets within the initial set of objects (7) to double or quadruple (according to chicken or sheep legs). Last, students must add the two new number sets (legs) together. • **Optional:** Present students with problem types within the Kindergarten expectations indicated on the chart above (for *Sessions 1* & *2*) such as: **Add to** – "There are 4 frogs in the pond. Three more frogs jump into the pond. How any frogs are in the pond now?" **Take from** – "There are 10 frogs sitting on the log. 4 frogs jump into the pond. How many frogs are left on the log?" **Put together/Take apart** – (see *Problem 2* from *Session 1*) "There are 3 frogs on the log and 4 frogs in the pond. How many frogs are there in all?" Also, "There are 8 frogs in all. 5 of the frogs are in the pond and the rest of the frogs are on the log. How many frogs are on the log?" • **Optional:** Consider using Bridges problem types in *Session 1, 2*, and *3* as extension or challenge problems for students. • The referenced chart can be viewed here: K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking (p. 9). **Literature Connection:** • *Mrs. Wishy Washy* by Joy Cowley **Number Corner Connections:** • Dec. – May *Number Corner* months explore representing addition in various ways. • Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem is a developing concept. This concept is explored in Jan., Mar., and May.
Module 3- Session 4: Story Problems Checkpoint		
K.OA.1 **K.OA.2** MP.1 **MP.4** **MP.5**	**Access Prior Learning and Connections to Future Learning:** • Represent addition with objects, fingers, verbal explanations, expressions and equations is covered in *Units 2,4,6,7*, and *8*. • Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem is also covered in *Unit 6*. • Fluently add with sums to 5 is reinforced from *Units 4* and *6*. • Counting on, doubles strategies and known facts combinations to 10 is not mastered until first grade. **Developing the Big Idea and key Strategic Behaviors:** • recognizing equivalence • **understanding part/whole relationships between addition and subtraction**	**Guiding Questions:** • How can I solve and represent problems using objects, pictures, words, and numbers? • How can strategies help us solve problems? How do you know when your answer makes sense? • How can you model a math problem with objects and pictures? **Instructional Note:** • Visual models are ten-frames, pictures and manipulatives. **Number Corner Connections:** • Dec. – May *Number Corner* months explore representing addition in various ways. • Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem is a developing concept. This concept is also addressed in Jan., Mar., and May. Fluently add with sums to 5 is a developing concept. It is explored in Feb.-May also. **Child Watching and Assessments:** • **Story Problem Checkpoint** – (see p. 18-19 and T1). Also see scoring and reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab pp. 79-80. • **Optional prompts** that can be used instead of this Checkpoint's problems, if desired – Prompt 1: Add to, Result unknown problem type – Sam had 5 apples on the table. Mom gave him 3 more apples. How many apples does Sam have now? Prompt 2: Take from, Result unknown problem type – Lisa had 9 blocks. She gave 5 to her sister. How many blocks does she have now? Prompt 3: Put together/take apart, Total unknown problem type – I have 3 blue balloons and 4 red balloons. How many balloons do I have in all? Prompt 4: Put together/take apart, Addend unknown – I have 9 pieces of fruit. 7 of them are apples, and the rest are oranges. How many oranges do I have?
Module 3- Session 5: Cubes in My Hand		
K.OA.1 K.OA.2 K.OA.3 **K.OA.5** MP.1 **MP.2**	**Access Prior Learning and Connections to Future Learning**: • Decompose numbers less than or equal to 10 in pairs more than one way. **Developing the Big Idea and key Strategic Behaviors:**	**Guiding Questions**: • What is an efficient way to count an amount greater than five? • What is an efficient strategy for counting five and some more? **Instructional Note:** • Visual models are cubes and drawings for equations. **Literature Connection:** • *Five Green and Speckled Frogs* ***-continues on next page-***

MP.5	• **understanding part/whole relationships between addition and subtraction** • **drawing and writing equations** **Secure:** • recognizing equivalence • **identifying combinations to 5**	**Number Corner Connections:** • Decompose numbers less than or equal to 10 in pairs more than one way and record is a developing concept. It is explored in all Oct-May. **Writing and Enrichment:** • *Home Connection* p. 24 and *Home Connection* tab pp. 191-192
Module 4- Session 1: Counting Sticks		
K.CC.1 K.CC.3 K.CC.7 **K.NBT.1** MP.1 MP.2 MP.3 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); and understand that these numbers are composed of ten ones and one, two, three… are addressed in *Unit 8*. **Developing the Big Idea and key Strategic Behaviors:** • **using the ten-structure** • **grouping and unitizing** • drawing and writing equations **Secure:** • using estimation	**Guiding Questions:** • What is an efficient way to count an amount greater than ten? • What is an efficient strategy for counting teen numbers? **Instructional Notes:** • Visual models are double ten-frame five-wise display cards, written equations, craft sticks. • Digital display tool link found on the Bridges web site. **Literature Connection:** • *The Masloppy Family* by Cathy Fosnot **Number Corner Connections:** • Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones are developing concepts. Addressed in Dec, Mar. & May.
Module 4- Session 2: Counting Dots		
K.CC.3 K.CC.5 K.CC.7 **K.NBT.1** MP.1 MP.2 **MP.4** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Compose and decompose numbers from 11 to 19 into ten ones and some further ones is addressed in *Unit 8*. **Working with the Big Idea and key Strategic Behaviors Developing:** • **using the ten-structure** • drawing and writing equations **Secure:** • using estimation	**Guiding Questions:** • What is an efficient way to count an amount greater than ten? • What is an efficient strategy for counting teen numbers? **Instructional Notes:** • Visual models are double ten-frame pair-wise display cards, double ten-frame five-wise display cards, ten-frames, cubes, written equations. • See sidebar notes on p. 10 for student flexibility. **Number Corner Connections:** • Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones are developing concepts. Addressed in Dec, Mar, & May. **Writing and Enrichment:** • *Home Connection* p. 12 and *Home Connection* tab pp. 193-194
Module 4- Session 3: Counting Ten-Frames		
K.CC.3 K.CC.5 K.CC.6 K.CC.7 **K.OA.1** **K.NBT.1** MP.1 MP.2 **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Count to 100 by 10s is not a focus in other *Units*. • Understand that the two digits of a two-digit number represent amounts of tens and ones is for exposure only in kindergarten. • Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. This is a	**Guiding Questions:** • How can we represent a number with tens and ones? • What is an efficient way of counting a large quantity of objects? • What strategy can we use to efficiently count a large quantity of objects? **Instructional Note:** • Visual models are ten-frame five-wise display cards, ten-frame dot cards, and written equation. **Literature Connection:** • *One is a Snail Ten is a Crab: A Counting by Feet Book* by April Pulley Sayre **Number Corner Connections:** • Count to 100 by 10s is a developing skill. This is addressed in Oct., Dec., Feb., Mar., Apr. & May. ***-continues on next page-***

MP.8	first grade standard and for exposure only in kindergarten. **Developing the Big Idea and key Strategic Behaviors:** • **using the ten-structure** • **drawing and writing equations**	**Writing and Enrichment:** • Consider using the counting ten-frames game as an additional *Work Place*
Module 4- Session 4: Counting Stick Bundles		
K.CC.5 **K.NBT.1** **MP.1** **MP.2** MP.4 **MP.6** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Compose and decompose numbers from 11 to 19 into ten ones and some further ones is addressed in *Unit 8*. • Understand that the two digits of a two-digit number represent amounts of tens and ones is a first grade standard and for exposure only in kindergarten. • Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used are first grade standards and for exposure only in kindergarten. **Developing the Big Idea and key Strategic Behaviors:** • composing numbers beyond 20 **Developing:** • **grouping and unitizing** • **using the ten-structure**	**Guiding Questions:** • How can we represent a number with tens and ones? • What is an efficient way of counting a large quantity of objects? • What strategy can we use to efficiently count a large quantity of objects? **Instructional Note:** • Visual models are ten-frame five-wise display cards and craft sticks. **Literature Connection:** • *One Hundred is a Family* by Pam Munoz Ryan **Number Corner Connections:** • Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones are developing concepts. Addressed in Dec., Mar. & May.
Module 4- Session 5: Counting Tens on the Hundreds Chart		
K.CC.1 **MP.2** **MP.7**	**Access Prior Learning and Connections to Future Learning:** • Count to 100 by 10s is not a focus in other *Units*. **Developing the Big Idea and key Strategic Behaviors:** • **counting to 100** • **grouping and unitizing** • skip counting **Secure:** • **recognizing number patterns**	**Guiding questions:** • How can we represent a number with tens and ones? • What is an efficient way of counting a large quantity of objects? • What strategy can we use to efficiently count numerals that end in 0? • What patterns can be found on the number grid? **Instructional Notes:** • Visual model is the one hundred grid, craft sticks bundles. • Digital display tool link found on the Bridges web site. **Literature Connections:** • *Toasty Toes* by Michael Dahl • *Piggies* by Audrey Wood • *How Many Feet in the Bed?* by Diane Johnston Hamm **Number Corner Connections:** • Count to 100 by 10s is a developing skill. This is addressed in Oct., Dec., Feb., Mar., Apr. & May. **Writing and Enrichment:** • *Home Connection* p. 25 and *Home Connection* tab pp. 195-196

References

Boaler, J. (2016). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages, and innovative teaching.* San Francisco, CA: Jossey-Bass & Pfeiffer Imprints.

Boaler, J. (2014). Research suggests that timed tests cause math anxiety. *Teaching Children Mathematics*,20(8), 469-474. doi:10.5951/teacchilmath.20.8.0469

Boaler, J. (n.d.). *Seeing as understanding: The importance of visual mathematics for our brain and learning.* Retrieved March 15, 2019, from https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/Visual-Math-Paper-vF.pdf

Carpenter, T., Fennema, E., Loef Franke, M., Levi, L., Empson, S.B. (2015). *Children's mathematics: Cognitively guided instruction* (2nd ed.). Portsmouth, NH: Heinemann.

Chapin, S. H., & Johnson, A. (2006). *Math matters: Understanding the math you teach, Grades K-8.* Sausalito, CA: Math Solutions Publications.

Council of Chief State School Officers. (2010). The Nevada Academic Content Standards. Retrieved from http://www.doe.nv.gov/uploadedFiles/nde.doe.nv.gov/content/Standards_Instructional_Support/Nevada_Academic_Standards/Math_Documents/mathstandards.pdf.

Common Core Standards Writing Team. (2015, March 6). *Progressions for the Common Core State Standards in Mathematics (draft). Grades K-5, Number and Operations in Base Ten.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Fosnot, C. T., & Dolk, M. (2001). *Young mathematicians at work: constructing number sense, addition, and subtraction*. Portsmouth, N.H.: Heinemann.

Fosnot, C. T., & Dolk, M. (2001). Landscape of learning. Retrieved from: http://www.contextsforlearning.com/samples/k3LandscapeofLearning.pdf

Van de Walle, J.A., Karp, K.S., & Bay-Williams, J.M. (2016). *Elementary and middle school mathematics: Teaching developmentally*. Boston, MA: Pearson.

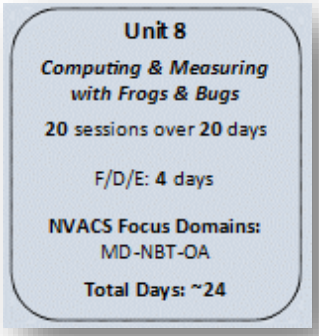
Van de Walle, J., Karp, K., Lovin, L., & Bay-Williams, J. (2014). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades Pre-K-2* (2nd ed.). Boston, MA: Pearson.

This page is intentionally left blank

Kindergarten Unit 8: Computing & Measuring with Frogs & Bugs

Big Conceptual Idea: K-5 Progression on Number and Operations in Base Ten (pp. 1-5) K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking (pp. 1-11), K-5 Progression on Measurement and Data (Measurement Part) (pp. 1-4, 6-7), K-5 Progression on Measurement and Data (Data Part) (pp. 1-5)

***Read the Bridges Unit Overview/Introduction for Unit 8 pp. i-vi. Also read each Module Overview for the current week's sessions and the current Session Summary**, along with details for the teaching of each session, as you work through Unit 8. These Introduction/Overview/Summary sections provide focus, clarity, vocabulary, definitions, and examples for the "big mathematical ideas and understandings" critical to Kindergarten. This information will support your professional decision-making within the Modules and Sessions as needed.*



Kindergarten Curriculum Pacing Framework: Balanced Calendar

Mathematical Background: Read Bridges *Unit 8 Overview* and *Introduction* (pp. i-vi)	**Unit Essential Questions for the Teacher:** How can my understanding of the progression of addition and subtraction strategies and problem types support my students' development to fluently add and subtract within 5? How might I support their understanding of number combinations to 10 by efficiently using the five-structure? How might I solidify their understanding of place value as 10 and some more 1s?

Instructional note:

Unit 8 Sessions prepare students for the **transition into 1st grade by reinforcing what students already know** about counting and cardinality, combinations of numbers within 5 and to 10, and a group of 10 ones and some more ones. They encourage **further development of place value understandings** and **beginning fluency with addition and subtraction**. Students continue to use five-frames, ten-frames, double ten-frames, cubes, craft sticks, the number line, and the number rack to visualize number and concept relationships; money is also used for counting, working within 10, and composing/decomposing numbers greater than 10 into groups of ten and some ones. The **measurement of length** is revisited, emphasizing estimation, comparison, and use of iterated nonstandard units (craft sticks and cubes), and students explore **written notations to 20**.

Van de Walle, Karp, and Bay-Williams state that there is an overwhelming emphasis in math instruction that *addition is simply put together* and *subtraction is simply take away*. "The fact is these are not definitions of addition and subtraction. When students develop these limited definitions, they often have difficulty later when addition and subtraction structures are different from put together and take away" (2013, p. 151). Subtraction in this *Unit* is an act of taking some away from a total, naming the missing part, and comparing or determining the difference between two quantities. Students build meaning by exploring the idea that subtraction is also taking apart or separating groups. It is beneficial to think of subtraction as an unknown addend problem rather than just counting what is left.

This *Unit* builds upon the relationship between addition and subtraction. Consider the different problem types addressed in *Table 1. Common addition and subtraction situations* of the NVACS (2010) on p. 88. The problem types are also shown in the *K-5 Progression on Counting and Cardinality and Operations and Algebraic Thinking* (linked above, p. 9), which highlights the problem types appropriate for kindergarten development. Support student learning by developing understanding of the different problem types and watching for the multiple strategies that may be used to solve story problems (see the chart on p. iii in the *Unit 8 Introduction*); the May *Number Corner Calendar Grid Workout* is an additional opportunity for this important work and child watching.

As another transition to 1st grade, consider introducing the *Work Place Folders* and *Work Place Logs* for student use during *Work Places* (if not previously introduced). Students will use these folders and logs in 1st grade to promote self-regulation, self-directed learning, choice and accountability. *Work Place Folder* explanations are found in your *Unit 1 Teachers Guide* (binder) under *Module 2 Session 4* (p. 16). The *Work Place Log* for this *Unit* is in the *Unit 8 Teachers Guide* under *Module 1 Teacher Masters* (p. T4).

The mathematics content of *Unit 8*:

Children construct understandings in connected and integrated ways, not as isolated, individual pieces. Therefore, continually ask students to explain how they are problem solving ("How did you know?", "What made you think that?", etc.) so you can make explicit the connections students are already making from previous learning, strengthen the synaptic connections being constructed, and encourage the continuance of this sense-making behavior (NVACS, 2010, p. 6).

- Support and instruct to the development of the new **big mathematical ideas** of:
  - **Representing and solving addition and subtraction problems with objects, drawings or equations**
  - **Combinations within 10**
  - **Using the ten-structure** (10 and some more 1s)
  - **Place determines value**

- Watch for students' attempts at thinking about and using these new **strategic behaviors/strategies** to demonstrate their emerging understandings of the big mathematical ideas:
  - **Flexible, accurate, efficient, and appropriate ways to solve addition and subtraction situations** (fluency)
  - **Seeing and using patterns**
  - **Multiple ways for representing and solving story problems**

Over time, with supportive and scaffolded instruction and interactions, students will be able to:

- employ more efficient and effective use of strategies leading to and confirming deeper, more expanded understandings of numbers and place value.
- gain a more precise understanding of comparing, estimating and measuring.
- demonstrate appropriate precision with mathematics content and vocabulary.
- flexibly explain and represent solutions to addition and subtraction problems.

Intentionality with the context and range of numbers students work with in mathematics supports and drives this development.

On-going enrichment:

- Take note of the ***Skills Across the Grade Level*** chart in the *Introduction* section (*Unit 8*, p. iv-v). This chart shows the extent and expectation of the development of Standards within this *Unit* and within the other *Units* and *Number Corner Workouts* that the Standards were taught throughout the year. This can support your professional decision-making for instruction, intensification and intervention.
- Expect all students to engage in the problem solving and in explaining and justifying their thinking.
- Use Table 1 of the Nevada Academic Content Standards (NVACS) titled "Common addition and subtraction situations" (p. 88) when thinking about intensification and acceleration.

Essential Academic Vocabulary Use these words consistently during instruction.				
Essential Academic Vocabulary: (first time explicitly taught) *indicates *Word Resource Cards* are available in the materials	**Review Academic Vocabulary:** (Vocabulary explicitly taught in previous *Units* or *Number Corner*)			
fact family*	*numeral* *number** *less than** *greater than** *long/longer/longest** *short/shorter/shortest**	*more** *subtraction* *subtract** *estimate**	*pattern** *square** *ones** *tens**	*addition* *add** *equal** *equation**

***Additional terminology that students may need support with**: minus, strategies*, reasonable, *after, before, in all, plus, different*

Standards listed in **bold** indicate a focus of the lesson.

NVACS (Content and Practices)	Mathematical Development of the Big Idea	Instructional Clarifications & Considerations
Module 1- Session 1: Bug Catchers		
K.CC.2 K.CC.3 **K.OA.1** K.OA.2 **K.OA.3** K.OA.4 K.OA.5 MP.1 **MP.4**	**Access Prior Learning and Connections to Future Learning:** • Represent subtraction with objects and equations is reinforced from *Units 3, 4, & 7*. **Developing the Big Idea and key Strategic Behaviors:** • **combination of within 10** • **composing and decomposing** **Secure:** • subitizing • using the five-structure	**Guiding Questions:** • How can I find what is left over when I take one quantity from another? • How did you separate the bugs from the original set? **Instructional Notes:** • Visual models are number to ten counting mat visuals and cubes. • Consider using plastic bugs instead of cubes, especially for ELs, if available. • To build the more precise understanding of subtraction as referenced above, consider having a separate clear container (plastic cup or basket) to hold the bugs when removing them from the original set. Students then see the group separated from rather than the group disappearing. **Number Corner Connection:** • Represent subtraction with objects and equations is expected to be secure in this *Unit*. It was introduced/developed in Dec-May. **Literature Connections:** • *Elevator Magic* by Stuart Murphy • *The Icky Bug* by Vicki Bachman ***-continues on next page-***

		• *Ten Flashing Fireflies* by Philemon Sturges (recommended in previous *Sessions* for addition; now it can be used for subtraction) **Writing and Enrichment:** • Consider having students write equations based on one of the read alouds.
Module 1- Session 2: Introducing Work Place 8A Bug Catchers		
K.CC.2 K.CC.3 **K.OA.1** K.OA.2 **K.OA.3** K.OA.5 MP.1 **MP.4** **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Represent subtraction with objects and equations is reinforced from *Units 3, 4, & 7*. **Developing the Big Idea and key Strategic Behaviors:** • **combination of within 10** • **composing and decomposing** **Secure:** • subitizing • using the five-structure	**Guiding Questions:** • What action indicates that we are subtracting? Why? • How can I find what is left over when I take one quantity from another? • How did you separate the bugs from the original set? **Instructional Notes:** • Visual model are cubes, student drawings, ten-frame counting mats, and equation recording sheet. • Optional *Unit 8 Work Place Log* available on p. T4. You might consider using this log at this time as a transition to 1st grade (if you have not already been using them). **Number Corner Connections:** • Represent subtraction with objects and equations is expected to be secure in this *Unit*. This was introduced/developed in Dec.-May. **Writing and Enrichment:** • See *Teacher Masters* (p. T1) of the *Work Place Guide* for *Differentiation* ideas • See *Work Place Instructions* (p. T2) for game variations • *Home Connection* p. 9 and *Home Connection* tab pp. 197-198
Module 1- Session 3: Piggy Bank Subtraction		
K.CC.2 K.CC.3 **K.OA.1** K.OA.2 **K.OA.4** K.OA.5 MP.1 **MP.4** **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Represent subtraction with objects and equations is reinforced from *Units 3, 4, & 7*. • Fluently subtract minuends to 5 is only in *Unit 8*; subtraction fluency. **Developing the Big Idea and key Strategic Behaviors:** • **combination of within 10** • **composing and decomposing** **Secure:** • subitizing • using the five-structure	**Guiding Questions:** • How is the *Piggy Bank* game similar to *Bugs and Bug Catchers*? • How can I model subtraction using my fingers? • Is counting backward a good strategy for subtraction? Why or why not? **Instructional Notes:** • Visual models are pennies, ten-frame counting mats, written equations, and number and dot spinners. • Consider using a small piggy bank, coffee can, milk carton, plastic cup, potato chip can, etc. to enhance the auditory to kinesthetic connection. **Number Corner Connections:** • Represent subtraction with objects and equations is expected to be secure in this *Unit*. This was introduced/developed in Dec.-May. • Fluently subtract minuends to 5 is expected to be secure at this time. This was explored in Jan.-May. **Literature Connection:** • *The Penny Pot* by Stuart Murphy **Writing and Enrichment:** • Consider having students think of something they would like to buy and write a story problem in a journal or on paper.
Module 1- Session 4: Introducing Work Place 8B Piggy Bank Subtraction		
K.CC.2 K.CC.3 **K.OA.1** K.OA.2 **K.OA.3** K.OA.5 MP.1 **MP.2** **MP.4** MP.8	**Access Prior Learning and Connections to Future Learning:** • Represent subtraction with objects and equations is reinforced from *Units 3, 4, & 7*. • Fluently subtract minuends to 5 is only in *Unit 8*; subtraction fluency. **Developing the Big Idea and key Strategic Behaviors:** • **combination of within 10** • **composing and decomposing** **Secure:** • subitizing • using the five-structure	**Guiding Questions:** • How is the Piggy Bank game similar to Bugs and Bug Catchers? • How can I model subtraction using my fingers? • Is counting backward a good strategy for subtraction? Why or why not? **Instructional Notes:** • Visual models are pennies, ten-frame counting mats, written equations, and number and dot spinners. **Number Corner Connections:** • Represent subtraction with objects and equations is expected to be secure in this Unit. This was introduced/developed in Dec.-May. • Fluently subtract minuends to 5 is expected to be secure. This is explored in Jan.-May. **Writing and Enrichment:** • See *Teacher Masters* (p. T5) of the *Work Place Guide* for *Differentiation* ideas • See *Work Place Instructions* (p. T6) for game variations

Module 1- Session 5: Introducing Work Place 8C Count & Compare Bugs		
K.CC.2 K.CC.5 **K.CC.6** **K.NBT.1** MP.1 **MP.2** **MP.4**	**Access Prior Learning and Connections to Future Learning:** • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group reinforced from all *Units*. • Use an equation to represent any number from 11 to 19 as the sum of 10 and some more ones was covered in *Unit 7*. **Developing the Big Idea and key Strategic Behaviors:** • **combinations of 10 and some more 1s** **Secure:** • **magnitude (greater than, less than, and equal to) within 10**	**Guiding Questions:** • How can I model subtraction using my fingers? • Is counting backward a good strategy for subtraction? Why or why not? • How are you counting your cubes/dots? Is there another way to count your cubes/dots? • How does using ten-frames help you count your dots? **Instructional Note:** • Visual models are cubes, double ten-frame dot cards and written equations using <, >, =. **Number Corner Connections:** • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is reinforced/extended in this lesson. This is explored in Oct., Dec., Jan., Apr., Mar., Apr., and May. • Use an equation to represent any number from 11 to 19 as the sum of 10 and some more ones is expected to be secure. This is explored in Mar. and Apr. **Writing and Enrichment:** • See *Teacher Masters* (p. T8) of the *Work Place Guide* for *Differentiation* ideas • See *Work Place Instructions* (p. T10) for game variations • *Home Connection* p. 23 and *Home Connection* tab p. 199-200 **Child Watching and Assessment:** **Bug Catcher CHECKPOINT** – observe 4 students (see p. 22 and T12). Also see scoring and reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab p. 88-89.
Module 2- Session 1: Frog Jump Measuring		
K.CC.1 **K.CC.6** K.MD.1 **K.MD.2** MP.1 MP.5 **MP.6**	**Access Prior Learning and Connections to Future Learning:** • Describe the length of an object, directly compare the lengths of two objects, and describe the difference between their lengths are all reinforced/extended from *Unit 4*. **Secure the Big Idea and key Strategic Behaviors:** • **measuring with non-standard measures** • **estimating** • **comparing**	**Guiding Questions:** • Which jump is longer or shorter? How do you know? • What tool did you use to compare the jumps? • Is placing the sticks end to end important? Why? **Instructional Notes:** • Visual models are physical jumps marked by masking tape and craft sticks. • Consider using pictures of frogs and a short video of how frogs jump to support ELs. **Number Corner Connections:** • Describe the length of an object concept is reinforced/extended. This was a focus in Nov. • Directly compare the lengths of two objects and describe the difference between their lengths. This was a focus in Nov. **Literature Connections:** • *Jump Frog Jump* by Robert Kalan (As a math/science connection activity: Teacher holds a playground ball with a bean bag frog balancing on the ball's top surface. With children in a circle, teacher and students say, "Jump, frog, jump!" Teacher drops the ball (For this to work, one must hold arms out straight and let the ball fall). Frog will "jump", and the children can try to catch the frog. The "jump" distance could also be measured. • Frog songs and rhymes available p. T6, T7 and T8
Module 2- Session 2: Introducing Work Place 8D Frog Jump Measuring		
K.CC.6 K.MD.1 **K.MD.2** MP.1 MP.5 **MP.6**	**Access Prior Learning and Connections to Future Learning:** • Describe the length of an object, directly compare the lengths of two objects, and describe the difference between their lengths are all reinforced/extended from *Unit 4*. **Securing the Big Idea and key Strategic Behaviors:** • **measuring with non-standard measures** • **estimating** • **comparing**	**Guiding Questions:** • Which jump is longer or shorter? How do you know? • What tool did you use to compare the jumps? • Is placing the sticks end to end important? Why? **Instructional Notes:** • Visual models are physical jumps marked with masking tape, craft sticks, and measuring recording sheets. • Consider having students measure a variety of objects that have an obvious length attribute (pencils, glue sticks, the edge of a book, etc.) with other measurement tools such as cubes, paper clips, unsharpened pencils, etc. **Number Corner Connections:** • Describe the length of an object concept is reinforced/extended. This was a focus in Nov. • Directly compare the lengths of two objects and describe the difference between their lengths was a focus in Nov. **Literature Connection:** • *Ready, Set, Hop* by Stuart Murphy ***-continues on next page-***

		Writing and Enrichment: • See *Teacher Masters* (p. T1) of the *Work Place Guides for Differentiation* ideas • See *Work Place Instructions* (p. T2) for game variations • *Home Connection* p. 10 and *Home Connection* tab pp. 201-202
Module 2- Session 3: Frog Eyes – Counting by Twos (optional)		
K.CC.3 K.CC.5 K.OA.1 K.OA.2 **1.NBT** MP.1 MP.7 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Count forward from a given number, rather than starting at 1 is being reinforced/extended. • Working with equal groups of objects by pairing objects or counting them by 2s problem type is not mastered until second grade. **Developing the Big Idea and key Strategic Behaviors:** • using repeated patterns • skip counting by 2s • graphing	**Instructional Notes:** • **Optional lesson** – this *Session* can also be used as additional A/D/E day as needed. • Visual models are triangular pattern made with constructed frogs with 2 eyes, number cards, and counting by twos mystery numbers charts.
Module 2- Session 4: Unifix Cube Measuring		
K.CC.1 K.CC.3 K.OA.1 K.OA.2 **K.NBT.1** MP.1 **MP.5** **MP.7** MP.8	**Access Prior Learning and Connections to Future Learning:** • Counting by ones and tens to 100 was also in *Unit 7*. **Developing the Big Idea and key Strategic Behaviors:** • writing equations **Secure:** • **measuring with non-standard measures** • **estimating** • **comparing** • counting by 10s and 1s	**Guiding Questions:** • What strategies can we use to count the cubes quickly or efficiently? • Is there more than one way? **Instructional Notes:** • Visual models are cubes into ten-trains, classmates and other objects and written equations. • Note SUPPORT ideas on p. 17 for common partial understandings. **Number Corner Connection:** • Count to 100 by 10s is expected to be secure. This is addressed in Oct. & Dec.- May. **Writing and Enrichment:** • See *Teacher Masters* (p. T9) of the *Work Place Guide* for *Differentiation* ideas • See *Work Place Instructions* (p. T10) for game variations
Module 2- Session 5: Make It Ten		
K.CC.3 K.OA.3 **K.OA.4** MP.1 MP.2 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 in pairs more than one way and record is reinforced from all *Units*. **Developing the Big Idea and key Strategic Behaviors:** • **using combinations within 10** • **writing equations** **Secure:** • identifying three-dimensional shapes	**Instructional Note:** • Visual models are cubes, ten-frames and written equations. **Literature Connections:** • *12 Ways to Get to 11* by Eve Merriam • *Domino Addition* by Lynette Long **Number Corner Connections:** • Decompose numbers less than or equal to 10 in pairs more than one way and record is expected to be secure. This is explored in Oct. through May. **Writing and Enrichment:** • Consider replacing this *Session* with replaying *Beat You to Ten* (*Unit 2, M3, S6* p. T8), focusing on the game variation suggestion for writing addition and subtraction equations. • Consider modifying this *Session* by using the first *Home Connection* Separate, Change unknown problem (p. 203) as a class problem solving opportunity rather than teaching and playing *Make It Ten*. • *Home Connection* p. 23 and *Home Connection* tab pp. 203-204
Module 3- Session 1: Place Value Build & Win		
K.CC.5 K.CC.6 **K.CC.7** **K.NBT.1**	**Access Prior Learning and Connections to Future Learning:** • Count up to 20 objects arranged in a line, rectangular array or circle to answer "how many?" is reinforced from *Units 4 & 6*.	**Guiding Questions**: • What is an efficient strategy for counting numbers in the teens? How is your strategy the same or different from your partner's? • What is the difference between a group of 10 and the left overs? ***-continues on next page-***

MP.1 MP.2 **MP.4** **MP.8**	• Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is reinforced/extended from all *Units*. • Compose and decompose numbers from 11 to 19 into tens and ones was also covered in *Unit 6*. **Developing the Big Idea and key Strategic Behaviors:** • using the ten-structure • **understanding combinations of 10 and some more 1s** • **understanding place determines value** • comparing written numbers using < > greater than 10	**Instructional Notes:** • Visual models are ten-trains of cubes, place value mats, written < > expressions, and ten & more numeral display cards. • Recommend if you skipped *M2, S3 Problems & Investigations*, replace Step 1 (warm-up) with counting by 10s instead of counting by 2s. • Note SUPPORT suggestion on p. 5 for addressing confusion over 10s and 1s. Clarification – Students may have difficulty with ten as a singular word that means 10 things. Take advantage of the *Word Resource Cards* for "one", "ones", and "tens" to provide picture support. Also make connections to the *Days in School Number Corner* routine with the ten-frames/dots. • Digital display tool link found on the Bridges web site. **Number Corner Connections:** • Reviewed or extended to higher levels - Count up to 20 objects arranged in a line, rectangular array or circle to answer how many. Explored in Feb., Mar. & Apr. • Expected to be secure - Compose and decompose numbers from 11 to 19 into tens and ones. Explored in Dec., Mar. & Apr. • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is reinforced/extended in this lesson. This is explored in Oct., Dec., Jan., Apr., Mar., Apr. and May.
Module 3- Session 2: One More Than, One Less Than		
K.CC.2 K.CC.4c **K.OA.2** **K.NBT.1** MP.1 MP.2 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Count up to 20 objects arranged in a line, rectangular array or circle to answer "how many?" is reinforced from *Units 4 & 6*. • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is reinforced/extended from all *Units*. • Compose and decompose numbers from 11 to 19 into tens and ones was also in *Unit 6*. **Developing the Big Idea and key Strategic Behaviors:** • using the ten-structure • comparing < > greater than 10 • **using one more/less within 20**	**Guiding Questions:** • What is the difference between more and less? • How are these numbers related? (e.g. How is six related to five? "6 is one more than 5." "Six is composed of 5 and 1." "Six is one more away from zero than five." etc.) **Instructional Notes:** • Visual models are ten-frame dot cards, double ten-frame dot cards, and number line. • Recommend if you skipped *Problems & Investigations* in *M2, S3*, replace Step 1 (warm-up) with counting backwards by 10s instead of counting by 2s. **Number Corner Connections:** • Reviewed or extended to higher levels - Count up to 20 objects arranged in a line, rectangular array or circle to answer how many. Explored in Feb., Mar., & Apr. • Expected to be secure - Compose and decompose numbers from 11 to 19 into tens and ones. Explored in Dec., Mar. & Apr. • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is reinforced/extended in this lesson. This is explored in Oct., Dec., Jan., Apr., Mar., Apr., and May **Writing and Enrichment:** • *Home Connection* p. 10 and *Home Connection* tab pp. 205-206
Module 3- Session 3: Two More Than, Two Less Than		
K.CC.2 **K.OA.2** **K.NBT.1** MP.1 MP.2 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Count up to 20 objects arranged in a line, rectangular array or circle to answer "how many?" is reinforced from *Units 4 & 6*. • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is reinforced/extended from all *Units*. • Compose and decompose numbers from 11 to 19 into tens and ones was also covered in *Unit 6*. **Developing the Big Idea and key Strategic Behaviors:**	**Guiding Questions:** • What is the difference between more and less? • How are these numbers related? (e.g. How is six related to four?) **Instructional Notes:** • Visual models are ten-frame dot cards, double ten-frame dot cards and number line. • If you skipped *Problems & Investigations* in *M2, S3*, replace Step 1 (warm-up) with counting round the oval by 10s instead of counting by 2s. • Digital display tool link (p. 2) found on the Bridges web site. **Number Corner Connections:** • Reviewed or extended to higher levels - Count to 20 objects arranged in a line, rectangular array or circle to answer how many. Explored in Feb., Mar. & Apr. • Expected to be secure- Compose and decompose numbers from 11 to 19 into tens and ones. Addressed in Dec., Mar. & Apr. • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group is reinforced/extended in this lesson. This is explored in Oct., Dec., Jan., Apr., Mar., Apr. and May. ***-continues on next page-***

	• using the ten-structure • comparing < > greater than 10 • **using two more/two less**	**Writing and Enrichment:** • Consider having students write number stories for "one more" or "one less" in journals or on paper. • For enrichment, consider changing the section of the number line used to greater numbers.
Module 3- Session 4: Count & Compare Bugs Checkpoint		
K.CC.6 **K.NBT.1** MP.1 MP.2 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • What games do you play at home? What do you already know about 5? **Developing the Big Idea and key Strategic Behaviors:** • **using the ten-structure** • combinations of 10 and some more 1s • **comparing written numbers using < > greater than 10** • **writing equations**	**Guiding Question:** • Can you find out what is more or less without counting? With counting? **Instructional Note:** • Visual models are cubes, double ten-frame dot cards, < >, and written equations. **Child Watching and Assessment:** • **Count & Compare Bugs CHECKPOINT–** observe 4 students (see p. 16 and T2). Also see scoring and reteaching suggestion in the *Assessment Guide*, Bridges Unit Assessments tab pp. 92-93.
Module 3- Session 5: Race You to 30 cents		
K.CC.6 K.OA.3 **K.OA.4** K.NBT.1 MP.1 MP.7 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • The counting on strategy is emphasized in this game. However, counting on as a strategy is a grade 1 standard. • 10 can be thought of a bundle of ten ones; called a "ten" is for exposure only. Composing a ten called one 10 is a 1st grade standard. **Developing the Big Idea and key Strategic Behaviors:** • recognizing combinations within 10 • recognizing combinations of 10 and some more 1s • **using the ten-structure**	**Instructional Notes:** • Visual models are pennies and dimes. • If you skipped *Problems & Investigations* in *M2, S3,* replace Step 1 (warm-up) with counting in a different way by 10s instead of counting by 2s. • Consider giving all students real pennies and dimes and then grouping in different ways to practice counting to and by 10. • Counting on is an advanced method (Level 2) because students apply an abstract principle: the understanding that a counting word represents a group of objects that are added, and addends become embedded within the total (OA Progressions, p. 5). • Digital display tool link found on the Bridges web site. **Writing and Enrichment:** • *Home Connection* p. 21 and *Home Connection* tab pp. 207-208
Module 4- Session 1: Where Do You See It?		
K.CC.3 K.CC.5 K.OA.2 **K.OA.3** K.OA.4 **MP.1** MP.2 **MP.4**	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs in more than one way and record is reinforced from all units except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is reinforced from *Units 2, 3, 4, & 7*. **Developing the Big Idea and key Strategic Behaviors:** • **combinations within 10** • equivalence • **part/whole relations: relationship between addition and subtraction** • **writing equations**	**Instructional Note:** • Visual models are ten-frame five-wise display cards, fingers, and written equations. **Number Corner Connections:** • Expected to be secure - Decompose numbers less than or equal to 10 into pairs into more than one way and record. This is explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Explored in Dec.-May. **Writing and Enrichment:** • Consider having students write a story problem to match an equation from their *Student Book* pp. 37-38.

Module 4- Session 2: Show Me		
K.OA.1 K.OA.2 **K.OA.3** MP.1 **MP.4** MP.7	**Access Prior Learning and Connections to Future Learning:** • Decompose numbers less than or equal to 10 into pairs in more than one way and record is reinforced from all units except *Unit 4*. • Represent addition with acting out situations, drawings, and questions is reinforced from *Units 2, 3, 4, & 7*. **Developing the Big Idea and key Strategic Behaviors:** • **recognizing combinations within 10** • understanding equivalence • **composing and decomposing within 10**	**Guiding Questions:** • Does the order of addends change the total? • How can I use models to represent addition? • Does where I put the cubes change the total? **Instructional Note:** • Visual models are written equations, cubes, ten-frame pair-wise display cards, counting mat visual, and the number rack. **Number Corner Connections:** • Expected to be secure - Decompose numbers less than or equal to 10 into pairs into more than one way and record. Explored in all months except Sept. • Represent addition with acting out situations, drawings, and questions. Explored in Dec-May. **Writing and Enrichment:** • *Home Connection* p. 11 and *Home Connection* tab pp. 209-210
Module 4- Session 3: Fact Families (optional)		
K.OA.1 K.OA.3 **K.OA.5** **1.OA.C.6** MP.1 MP.2 MP.3 **MP.8**	**Access Prior Learning and Connections to Future Learning:** • Using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 - 8 = 4) and analyzing fact families is a first grade standard. This *Session* is for exposure only. **Developing the Big Idea and key Strategic Behaviors:** • writing equations **Secure:** • using fluency with combinations to 5	**Guiding Question:** • How do you know if you have found all the ways to make equations to show the relationships between 4, 1 and 5? **Instructional Notes:** • **Please consider making this an exploration activity rather than a teacher- directed lesson.** • Visual models are written equations, two-color counters, cubes and number rack (Five-frame display cards are in the original *Session* interactions.). • Make explicit connections to the number rack work from yesterday. • To increase student engagement, consider having students choose a manipulative (at least 5 two-color counters each, or 10 cubes of two colors, or a number rack); have students represent as many different combinations of 5 as they can; as the students explain their thinking/combinations with the class, the teacher records the student equations and asks questions to drive student exploration to many possibilities for recording equations (5 = 4+1; 5 = 1+4; 1 = 5-4; 4 = 5-1; 4+1 = 5; 1+4 = 5; 5-4 = 1; 5-1 = 4).
Module 4- Session 4: Double Irish Chain Frog Quilt, Part 1 (optional)		
K.CC.5 **MP.6**	**Access Prior Learning and Connections to Future Learning:** **Developing the Big Idea and key Strategic Behaviors:** • finding patterns	**Guiding Question:** • How can we extend a pattern we already see? **Instructional Notes:** • **OPTIONAL SESSION** – days can be used as additional A/D/E days as needed. • Visual model is the quilt squares and completed quilt.
Module 4- Session 5: Double Irish Chain Frog Quilt, Part 2 (optional)		
MP.6 MP.7	**Access Prior Learning and Connections to Future Learning:** **Developing the Big Idea and key Strategic Behaviors:** • finding patterns	**Guiding Question:** • How can we extend a pattern we already see? **Instructional Notes:** • **OPTIONAL SESSION** – days can be used as additional A/D/E days as needed. • Visual model is the quilt squares and completed quilt. **Writing and Enrichment:** • *Home Connection* p. 26 and *Home Connection* tab p. 211-212

References

Battista, M. T. (2012). *Cognition-based assessment & teaching of addition and subtraction: Building on students' reasoning.* Portsmouth, NH: Heinemann.

Battista, M. T. (2012). *Cognition-based assessment & teaching of geometric shapes*: B*uilding on students' reasoning.* Portsmouth, NH: Heinemann.

Boaler, J. (2016). Fluency without fear. Retrieved from https://www.youcubed.org/fluency-without-fear.

Boaler, J. (2016). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages, and innovative teaching.* San Francisco, CA: Jossey-Bass & Pfeiffer Imprints.

Boaler, J. (2014). Research suggests that timed tests cause math anxiety. *Teaching Children Mathematics*,20(8), 469-474. doi:10.5951/teacchilmath.20.8.0469

Boaler, J. (n.d.). *Seeing as understanding: The importance of visual mathematics for our brain and learning.* Retrieved March 15, 2019, from https://bhi61nm2cr3mkdgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/Visual-Math-Paper-vF.pdf

Carpenter, T., Fennema, E., Loef Franke, M., Levi, L., Empson, S.B. (2015). *Children's mathematics: Cognitively guided instruction* (2nd ed.). Portsmouth, NH: Heinemann.

Chapin, S. H., & Johnson, A. (2006). *Math matters: Understanding the math you teach, Grades K-8.* Sausalito, CA: Math Solutions Publications.

Council of Chief State School Officers. (2010). The Nevada Academic Content Standards. Retrieved from http://www.doe.nv.gov/uploadedFiles/nde.doe.nv.gov/content/Standards_Instructional_Support/Nevada_Academic_Standards/Math_Documents/mathstandards.pdf.

Common Core Standards Writing Team. (2011, May 29). *Progressions for the Common Core State Standards in Mathematics (draft). K, Counting and Cardinality; Grades K-5, Operations and Algebraic Thinking.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Common Core Standards Writing Team. (2015, March 6). *Progressions for the Common Core State Standards in Mathematics (draft). Grades K-5, Number and Operations in Base Ten.* Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Fosnot, C. T., & Dolk, M. (2001). *Young mathematicians at work: constructing number sense, addition, and subtraction*. Portsmouth, N.H.: Heinemann.

Fosnot, C. T., & Dolk, M. (2001). Landscape of learning. Retrieved from: http://www.contextsforlearning.com/samples/k3LandscapeofLearning.pdf

National Council of Teachers of Mathematics (NCTM). (2014). Procedural fluency in mathematics: A position of the National Council of Teachers of Mathematics. Retrieved from *www.nctm.org.*

Parrish, S. (2010). *Number talks: Helping children build mental math and computation strategies, grades K-5.* Sausalito, CA: Math Solutions.

Van de Walle, J.A., Karp, K.S., & Bay-Williams, J.M. (2016). *Elementary and middle school mathematics: Teaching developmentally*. Boston, MA: Pearson.

Van de Walle, J., Karp, K., Lovin, L., & Bay-Williams, J. (2014). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades Pre-K-2* (2nd ed.). Boston, MA: Pearson.

This page is intentionally left blank