# 2017-2018 WCSD Algebra 1 Program Evaluation Rubric

**Evaluator Number**

8

**Program Number**

4

**Name of Text**

Algebra 1

**Publisher**

Bought on Mifflin Harcourt

**Rate This Text Overall**

- [ ] High
- [x] Mid
- [ ] Low

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**Focus: Evaluate the table of contents and any pacing guides. Do not stop there; also evaluate units, chapters, and lessons. (Both student and teacher materials)**

**Interpret the structure of expressions**

HSA.SSE.A.1 Interpret expressions that represent a quantity in terms of its context.*

HSA.SSE.A.1.a Interpret parts of an expression, such as terms, factors, and coefficients.

HSA.SSE.A.2 Use the structure of an expression to identify ways to rewrite it.

**Write expression in equivalent forms to solve problems**

HSA.SSE.B.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.*

HSA.SSE.B.3.a Factor a quadratic expression to reveal the zeros of the function it defines.

HSA.SSE.B.3.b Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

**Create equations that describe numbers or relationships**

HSA.CED.A.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions and simple rational and exponential functions.

HSA.CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

HSA.CED.A.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.

HSA.CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law (V = IR) to highlight resistance R.

**Understand solving equations as a process of reasoning and explain the reasoning**

HSA.REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

**Solve equations and inequalities in one variable**

HSA.REI.B.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

HSA.REI.B.4 Solve quadratic equations in one variable.

HSA.REI.B.4.a Use the method of completing the square to transform any quadratic equation in x into an equation of the form 〖(x-p)〗^2= q that has the same solutions. Derive the quadratic formula from this form.

HSA.REI.B.4.b Solve quadratic equations by inspection (e.g., for x^2=49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation.

A.REI.11 Explain why the x-coordinates of the points where the graphs of the equations y=f(x) and y=g(x) intersect are the solution of the equation f(x)=g(x).

**Solve systems of equations**

HSA.REI.C.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

HSF.IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*

**Interpret functions that arise in application in terms of the context.**

HSF.IF.B.6 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.*

**Analyze functions using different representations**

HSF.IF.C.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*
HSF.IF.C.7.a Graph linear and quadratic functions and show intercepts, maxima, and minima.
HSF.IF.C.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function
HSF.IF.C.8.a Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.
HSF.IF.C.8.b Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)12^t$, $y = (1.2)^t/10$, and classify them as representing exponential growth or decay.

**Build a function that models a relationship between two quantities**

HSF.BF.A.1 Write a function that describes a relationship between two quantities.*
HSF.BF.A.1.a Determine an explicit expression, a recursive process, or steps for calculation from a context.
HSF.BF.A.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.*

**Build new functions from existing functions**

HSF.BF.B.3 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.

**Construct and compare linear, quadratic, and exponential models and solve problems**

HSF.LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.
HSF.LE.A.1.a Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.
HSF.LE.A.1.b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
HSF.LE.A.1.c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
HSF.LE.A.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

**Interpret expressions for functions in terms of the situation they model**

HSF.LE.B.5 Interpret the parameters in a linear or exponential function in terms of a context.

**100% of the standards are in the textbook.**
Comments?

For the most part, yes. Missing f(x)=g(x), and some simplifying exponents, but doesn't look bad.

- ○ Less than 25%
- ○ Less than 85% but greater than 50%
- ● Less than 100% but greater than 85%
- ○ 100%

***Materials: Lessons, chapter/unit assessments, daily routines, and homework assignments***

**Student work involves significant work with applications/modeling and problems that use algebra skills.**
Comments?

Yes.

- ○ Does not occur
- ○ Sometimes occurs
- ○ Frequently occurs
- ● Consistently occurs

**There are problems at a level of sophistication appropriate to high school (beyond mere review of previous course standards) that involve the application of knowledge and skills from grades 6-8. Any problems at the level of rigor of middle school standards are appropriately labeled.**
Comments?

Could do a better job identifying which problems are below grade level. Sophistication is fine.

- ○ Does not occur
- ○ Sometimes occurs
- ● Frequently occurs
- ○ Consistently occurs

**Rigor: Examine the instructional materials, student practice and assessments. Look for evidence of where the standards explicitly require students to understand concepts. Do the assignments that students work on build that understanding? Do assessment tasks reveal whether students understand the mathematics in question?**
Comments?

The assignments are...fine. Nothing special, nothing outstanding. This is a well written basic textbook. I like many of the bundled assessment tasks.

- ○ Does not occur
- ○ Sometimes occurs
- ● Frequently occurs
- ○ Consistently occurs

**Rigor: Do the materials feature high-quality conceptual problems and conceptual discussion questions? Do they provide opportunities for multiple representations?**
Comments?

Yes, though with the way the book is presented, all the answers are given to the student. A companion book for students that DID'T have all the answers given would improve this text.

- ○ Does not occur
- ○ Sometimes occurs
- ● Frequently occurs
- ○ Consistently occurs

**Rigor: Are the materials designed so that teachers and students spend sufficient time working with applications, without losing focus on the standards defined for the course? Are there single- and multi-step contextual problems that develop the mathematics of the course, afford opportunities for practice, and engage students in problem solving?**
Comments?

I do like that this book is split into small "Modules". Makes chunking the material easier! There is a VERY wide variety of problems in this gigantic textbook. However, it seems like the authors decided to identify every single type of problem that occurs in Algebra and give a walk through of that type. It just makes a giant list that students need to memorize a process for, instead of the students discovering on their own.

- ○ Does not occur
- ○ Sometimes occurs
- ● Frequently occurs
- ○ Consistently occurs

**Rigor: Are the materials designed so that students attain the fluency and procedural skills required? Evaluate the lessons, chapter/unit assessments, daily routines, and homework assignments for evidence in the development of fluency and procedural skill supported by conceptual understanding.**
Comments?

Very much so. There is at least one of every type of problem in the entire world in this text. Very thorough.

- ○ Does not occur
- ○ Sometimes occurs
- ○ Frequently occurs
- ● Consistently occurs

**Coherence: Are the materials coherent in their content, do the standards build on each other in a way that is beneficial to the instruction, student practice and assessments?**
Comments?

Although the materials are coherent, there is SO MUCH here that it is overwhelming, both for me and I assume the students.

- ○ Does not occur
- ○ Sometimes occurs
- ● Frequently occurs
- ○ Consistently occurs

**Mathematical Practices: Are the mathematical practices addressed in such a way to benefit instruction and expectation of students?**
Comments?

I did not need the Mathematical Practices explicitly stated. However, they are included in most of the sections subtly. You will see a "Precision" section, and another with "Appropriate Tools". So, yes, they are all there. However, I'm not sure if that was intentional or not?

- ○ Does not occur
- ○ Sometimes occurs
- ● Frequently occurs
- ○ Consistently occurs

**Are the appropriate Algebra 1 statistics standards present in the text?**
Comments?

Yes

- ○ Does not occur
- ○ Sometimes occurs
- ○ Frequently occurs
- ● Consistently occurs

**What supplemental resources are included with the text? Briefly describe the pros and cons.**

There is a companion website which includes student and teacher editions, along with homework software. Its interactive textbook online is WAAAYY better than the actual print text! The response to intervention book is actually very cool: Pre-Test, Post-Test, and Reteach. It's nice that both that and the Assessment Readiness book are organized by skill and CCSS standard. Very cool that HMH offers staff/ district training on how to use their book/materials. Really extensive set of supplemental resources; loved the inclusion of the case studies, too.

However, I'm taking this time to discuss this ENORMOUS, and PLAIN, textbook. There are a lot of really well thought out problems. However, for a student to receive this book and use it as their main learning resource in class would be a