

# How Close to 100?

## Using Known Facts

**Grade Level:** 3

**Number of Players:** 2

**Materials Needed:** How Close to 100? gameboard, 1 to 2 dice, pen or pencil

**Mathematical Understanding:**

Building fluency with factors, multiples, and recall of single-digit multiplication facts.

**Object of the Game:**

The goal is to fill up the grid to get it as full as possible.

**Directions:**

Players should decide prior to beginning play if they will use 1 or 2 dice, depending on their comfort with factors 3, 4, 6, 7, 8, and 9. Players that would like more practice with one or two of the factors should use just one dice and use the one or two factors they'd like more practice with as one of the factors for every problem while the die generates the other factor. Player draws a line in the array to indicate the known fact used.

Player 1 rolls 1-2 dice. If playing with 1 die the player chooses from the agreed upon factor(s) selected prior to beginning play and uses the rolled number to be their other factor. The player then draws the array on the grid anywhere, so long as it does not overlap another array. The player then draws a line separating the array into two arrays, one of the arrays shows the known fact the player used to solve. Finally, the player writes the equation that describes the array. If playing with 2 dice, the 2 rolled numbers are the factors used to draw the array write the equation.

Player 2 repeats the same process.

Each player continues in turn until both players have rolled the die and cannot put any more on the grid.

**Guiding Questions:**

What known fact did you use?

Which factor (if specific "fixed factors" have been chosen) is the most strategic for you to use? Why?

What are you going to try?

What did you think about to come to your answer?

Is there another way you could figure it out?

Can you think of another fact that strategy would work well for?

**Differentiation:**

Each player can have their own number grid. Play moves forward to see who can get closest to 100.

**Game Trajectory:**

**Grade 3 Fall:** Players use 1 die to generate a factor and then choose the other factor from 1, 2, 5, 10 based on which will yield the array that is the most strategic.

**Grade 3 Winter:** Players use 1 or 2 dice depending on comfort with factors 3, 4, 6, 7, 8, and 9. Players that need more practice with one of the factors should play with 1 die and select the difficult factor as a “fixed factor” (will be used for all arrays) and use the die to generate the other factor.

**Grade 3 Spring:** Players use 2 dice to generate both factors.

**Clean up Checklist for Game Bag:**

Copies of gameboard

2 Dice

Markers, crayons, pencils, or pens

## References:

Boaler, J. (2015). Fluency without Fear: Appendix A. Retrieved from <https://bhi61nm2cr3mkgk1dtaov18-wpengine.netdna-ssl.com/wp-content/uploads/2017/03/FluencyWithoutFear-2015-1.pdf>

Kling, G. & Bay-Williams, J. (2014). Assessing basic fact fluency: appendix. *Teaching Children Mathematics*, 20(8). Retrieved from <https://www.nctm.org/Publications/Teaching-Children-Mathematics/2014/Vol20/Issue8/Assessing-Basic-Facts-Fluency/>.

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Circle the fixed factor(s): 3, 4, 6, 8, 9

1. ( \_\_\_ x \_\_\_ ) + ( \_\_\_ x \_\_\_ ) = \_\_\_

6. ( \_\_\_ x \_\_\_ ) + ( \_\_\_ x \_\_\_ ) = \_\_\_

2. ( \_\_\_ x \_\_\_ ) + ( \_\_\_ x \_\_\_ ) = \_\_\_

7. ( \_\_\_ x \_\_\_ ) + ( \_\_\_ x \_\_\_ ) = \_\_\_

3. ( \_\_\_ x \_\_\_ ) + ( \_\_\_ x \_\_\_ ) = \_\_\_

8. ( \_\_\_ x \_\_\_ ) + ( \_\_\_ x \_\_\_ ) = \_\_\_

4. ( \_\_\_ x \_\_\_ ) + ( \_\_\_ x \_\_\_ ) = \_\_\_

9. ( \_\_\_ x \_\_\_ ) + ( \_\_\_ x \_\_\_ ) = \_\_\_

5. ( \_\_\_ x \_\_\_ ) + ( \_\_\_ x \_\_\_ ) = \_\_\_

10. ( \_\_\_ x \_\_\_ ) + ( \_\_\_ x \_\_\_ ) = \_\_\_