

# How Close to 100?

## Fixed Factors 1, 2, 5, 10

### Mathematical Understanding:

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

**Grade Level:** 3

**Number of Players:** 2

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

### Object of the Game:

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

### Directions:

Player 1 rolls the die. The player chooses either 1, 2, 5, or 10 as a factor and uses the other number they rolled to be their other factor. The player then draws the array on the shared grid anywhere, so long as it does not overlap another array, and writes the equation that describes the array.

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 do you know?

Which factor (1, 2, 5, or 10) is the most strategic for you to use? Why?

Why did you choose that factor?

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.

<p><b>Game Trajectory:</b></p> <p><b>Grade 3 Fall:</b> 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.</p> <p><b>Grade 3 Winter:</b> 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 dice and select the difficult factor as a “fixed factor” (will be used for all arrays) and use the die to generate the other factor.</p> <p><b>Grade 3 Spring:</b> Players use 2 dice to generate both factors.</p>	<p><b>Clean up Checklist for Game Bag:</b></p> <p>Copies of gameboard</p> <p>Die</p> <p>Markers, crayons, pencils, or pens</p>
--	--

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/>.

# How Close to 100?

## Using Known Facts


Circle the fixed factor(s): 1, 2, 5, 10

1. \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

6. \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

2. \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

7. \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

3. \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

8. \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

4. \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

9. \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

5. \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_

10. \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_