

Fill the Stairs

Topics: Comparison of two-digit numbers, estimation

Materials: Fill the Stairs sheet, 2 ten-sided dice per game (different colors)

Common Core: 1.NBT.3, MP1, MP6, MP7

The numbers have to increase as they go up the stairs. Where should each number go?

Why we love Fill the Stairs

This clever game requires the thoughtful placement of two-digit numbers in order, before all the numbers are known. Fill the Stairs is a compelling and fun game that holds up after repeated playing.

The Launch

For the first game, you can play at a station with everyone together. Everyone gets a Fill the Stairs worksheet for each game. Choose one 10-sided die to be the “tens” die, and the other ten-sided die to be the “ones” die. When you roll them both, you get a one- or two-digit number. After every roll, everyone places the number that was rolled where they like on the stairs. The only rule is that numbers higher up on the stairs must be greater than all the numbers below them. If a player can’t use a number, it gets written under the stairs as a “discard.” Whoever fill up their stairs first is the winner.

Once you’ve played a game altogether, students can play on their own in pairs or groups of three. The best way to play is with everyone in one game using the same rolls, so everyone has something to do on every turn.

Prompts and Questions

- Where are you going to put that number? Why there?
- What number are you hoping for on the next roll?
- How do you know that number is bigger than that one?

The Wrap

Discuss strategies with the students. What’s the best way to win the game? Can students find any potential problems with the proposed strategies of their peers?

Tips for the classroom

1. If the dice roll off the table, they should re-roll.
2. A quick chant like “shake, shake, roll!” can help the game move, and avoid students spend too long shaking the dice.
3. Fill the Stairs can easily be played collaboratively rather than competitively. Students try to fill the stairs as a team with the fewest number of “wasted” moves.
4. Let students decide after each roll which digit gives the ten and which give the one.

Fill the Stairs

Roll the dice to make a two-digit number, and write it in on one of the stairs. Each number you write in must be bigger than all the numbers below it, and smaller than all the numbers above it. If you can't use a number, write down the number under the stairs, and skip your turn.

The game is over if someone fills in all the steps in their staircase.

