

# Pattern Blocks Fraction Game

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<b>Reporting Category</b>	Number and Number Sense
<b>Topic</b>	Comparing, ordering, and representing fractions
<b>Primary SOL</b>	4.2 The student will a) compare and order fractions and mixed numbers; and b) represent equivalent fractions.
<b>Related SOL</b>	4.5b

## Materials

- Pattern Blocks Fraction Game Board (attached)
- Pattern blocks
- Cubes (dice) with one of the numbers  $1, \frac{1}{2}, \frac{1}{3}, \frac{1}{3}, \frac{1}{6}, \frac{1}{6}$  written on each of the six faces (or a spinner)

## Vocabulary

*fraction, whole, part, numerator, denominator, like denominators, unlike denominators, greater than, less than, equal to, represent*

## Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

### Version 1

1. Distribute copies of the Pattern Blocks Fraction Game Board. Put students into pairs. Give each pair a bag of pattern blocks and a cube (or spinner), and have each pair play the game, as follows:
  - Player 1 rolls the cube (or spins the spinner), selects the pattern block that represents the rolled fraction (the hexagon is always a whole), names it, and places it on one of the hexagon “frames” on the game board.
  - Play continues to the right.
  - Once a particular pattern block shape has been used to begin filling a hexagon, that hexagon must be filled in completely with that shape.
  - Each time a player adds a block to his/her game board, he/she must tell what fractional part of the hexagon is covered and record this fraction on a record sheet.
  - Near the end of the game, if a player rolls a fraction that cannot be used, the player loses that turn.
  - The first player to fill in all the hexagons on his/her game board is the winner.

### Version 2

- Game is played same as above, except players may place different shaped blocks on the same hexagon.
- After the game, students may be asked to write equations representing the fractional parts that make up each hexagon.

### Version 3

- Game is played same as above, except students must build and finish one hexagon at a time.
- If students roll  $\frac{1}{2}$  and have  $\frac{1}{6}$  left to fill in a hexagon, they may take  $\frac{1}{2}$  as  $\frac{3}{6}$ , or as  $\frac{1}{6}$  and  $\frac{1}{3}$ .
- Students may finish one hexagon and begin another on the same turn.
- After each turn, students may announce the total covered on the board (e.g.,  $3\frac{2}{3}$ ).
- At the end of the game, students may be asked to write equations to match the hexagons on their boards.

### Version 4

- Game is played as in version 3, except game starts with every hexagon on the board covered with pattern blocks in one shape or another. On each roll, the player must subtract the equivalent pattern block fraction from the board. The winner is the first one to remove all blocks from his/her board.

### Assessment

- **Questions**
  - What observations did you make while playing the game? How did your game board compare to your partner's?
  - Are there combinations that will not work to cover a hexagon? If so, what are they?
- **Journal/Writing Prompts**
  - Explain in writing the directions for the game so that your parents would understand how to play. Play the game at home!
  - When playing version 4, write the equation as you subtract each fractional piece. Record this in your journal, and write what you notice as you subtract fractions, especially those with unlike denominators. Explain how this relates to adding fractions with and without like denominators.
- **Other**
  - Observe students playing games.
  - Have students discuss the various ways they traded pattern blocks and create an organized list of the equivalent blocks.

### Extensions and Connections (for all students)

- Have students find all the possible ways to cover a hexagon and write the equation for each one.

# Pattern-Blocks Fraction Game Board

