

Modeling Operations with Fractions

Adapted by Stephanie Z. Smith from *Investigations in Number, Data and Space*

1. Fill the Hexagons (Kindergarten)

Learning Goals: Finding combinations of shapes that fill an area; building knowledge about the relationships among pattern block shapes

Materials: Pattern blocks, Fill the Hexagons Gameboard (Student Sheet 2), pattern block shape cube (die) (composition and decomposition in geometry)

Task: Play Fill the Hexagons. Taking turns with a partner, roll the pattern blocks shape cube, take one pattern block of the shape rolled on the cube, and place it anywhere in one of the six hexagons on the gameboard. Once placed in one of the six hexagons, a pattern block must remain in that hexagon. Fill the gameboard with pattern blocks, with no empty spaces. If you can't use the shape rolled, your turn is over. First one to fill all six of the hexagons on his or her gameboard wins the round. Repeat until time is up.

Discussion: What did you notice about these shapes as you played this game? How do these shapes fit together to make a hexagon? What helped you predict which shapes you needed next? What relationships among the pattern block shapes did you notice?

2. Seeing Shapes within Shapes (Grade 2)

Learning Goals: Fitting shapes together to cover a region; putting parts together to form a whole (composition and decomposition in both geometry and number)

Materials: Pattern blocks, Hexagon Cookies (Student Sheet 5), pattern block templates

Task: Play Hexagon Cookies. Determine all of the possible ways to cover a yellow hexagon with pattern blocks. Leave each solution on the desk and record it on the Hexagon Cookies sheet. Solutions that use the same number of each pattern block are counted as one solution, even though these blocks may be arranged in more than one pattern.

Discussion: What combinations can cover a yellow hexagon? How do you know you have all possible combinations?