

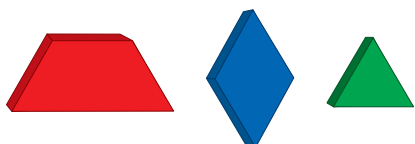
Pattern Block Pizza

OBJECTIVE

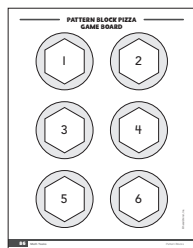
Children will use Pattern Blocks to develop the concept of equivalence while working informally with halves, thirds, and sixths. They will develop an intuitive understanding of probability.

WHAT YOU WILL NEED

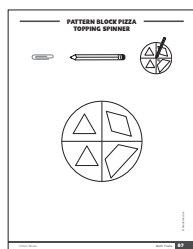
Pattern Blocks, about 14 trapezoids, 25 blue parallelograms, and 40 green triangles per pair



Pattern Block Pizza
Game Board, page 86



Pattern Block Pizza
Topping Spinner, page 87



Crayons

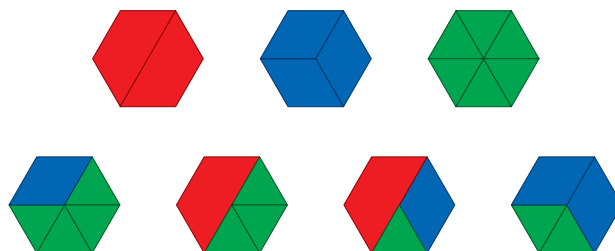


OVERVIEW

In this game for two players, children take turns trying to cover hexagon “pizzas” with Pattern Block “toppings.”

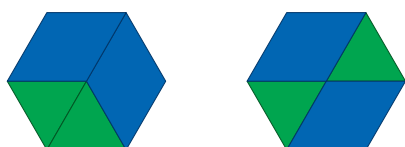
THE BIG IDEA

This activity provides children with an informal look at fractions. The symbolic language of fractions does not need to be introduced; the approach can be very low-key by keeping the focus on the geometric shapes and referring to the blocks by color rather than geometric name. Nevertheless, as children put the toppings on their pizzas, they are learning all the ways in which one whole (the yellow hexagon) can be formed using halves (the red trapezoids), thirds (the blue parallelograms), and sixths (the green triangles). There are six possible combinations for covering the pizzas:





Some children may initially think that a pizza is “different” if it has the same toppings arranged in a different way. Here is an example of two pizzas that have the same toppings arranged differently.



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Theoretically, the posted class results should show that green triangles were used most often as toppings—even if children made very few or no exchanges of blocks in the course of the game. Some children may be able to make the connection that there are more green triangles because there are more sectors on the spinner for the triangle. This kind of observation lays the foundation for understanding probability and how games of chance work.

As children trade larger blocks for smaller ones they are being informally introduced to equivalent fractions. For example, a trapezoid ($\frac{1}{2}$) may be traded for a

parallelogram ($\frac{1}{3}$) and a triangle ($\frac{1}{6}$) or for three triangles ($\frac{3}{6}$). When making these trades, children may not see the trapezoid as $\frac{1}{2}$ of the original hexagon. They may instead see it as a new whole and therefore define the triangle as $\frac{1}{3}$ of the trapezoid and the parallelogram as $\frac{2}{3}$ of the trapezoid. Hence, the triangle could be thought of as $\frac{1}{6}$ of the hexagon or $\frac{1}{3}$ of the trapezoid or $\frac{1}{2}$ of the parallelogram. Learning that a fraction is defined in terms of how large the whole is is an important lesson that many children struggle with. Having these concrete experiences with Pattern Blocks can help to lay the foundation for understanding the concept of fractions.

This lesson on fractions is nicely connected to the geometric concept of area. The equivalent trades may be made because the pieces have equivalent areas. For example, a parallelogram and a triangle fit exactly on top of a trapezoid.

Children’s experience in playing the game of Pattern Block Pizza may provide them with an intuitive basis for future work with area, fractions, and probability.

1 INTRODUCTION

- ▶ Ask children to imagine that they are going to a pizzeria in Pattern Block Town where all the pizzas are the same size and shape as the yellow block and the toppings are represented by the red, blue, and green Pattern Blocks.
- ▶ Ask children for ideas on what kinds of toppings the red, blue, and green blocks could stand for.
- ▶ Call on a volunteer to be a pizza maker and to cover a pizza completely with toppings.
- ▶ Call on another volunteer to show another way to cover a pizza completely.
- ▶ Then play part of a game of Pattern Block Pizza with the children before they begin the On Their Own.

2 ON THEIR OWN

Children will complete the On Their Own. During this time, the teacher's role is to:

- ▶ ask probing questions to guide and extend
- ▶ record student thinking
- ▶ record student conversation that promotes collaboration

Use the information gathered to inform the Math Talk.

3 MATH TALK

Use prompts such as these to promote class discussion.

- ▶ How do the posted game boards differ?
- ▶ Did anyone find another way to cover a pizza? Show us.
- ▶ How many different ways can a pizza be covered?
- ▶ Are there any ways to cover a pizza that never came up? Why do you think they never came up?
- ▶ Did you ever trade a block for others? When did you do this?
- ▶ What kinds of trades could you make?

4 EXTENSION

- ▶ Make a tally of how often each of the six pizza combinations came up. Ask children to explain why certain combinations showed up more often or less often than others.
- ▶ Have children play the game again with this change: When they spin a topping that is too large to fit on their pizza, they must give their opponent the chance to use it.
- ▶ Have children design a new spinner with a different number of sectors and/or different choices of toppings. Have them play the game with the new spinner and compare results with the On Their Own.

Pattern Block Pizza

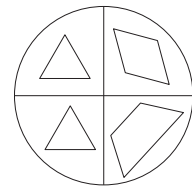
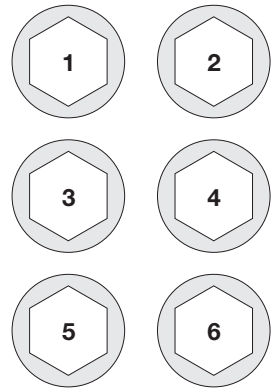
ON THEIR OWN

Play Pattern Block Pizza! | Players: 2

Game pieces: One Pizza Game Board with yellow hexagons as pizzas 1-6 for each player
Red, blue and green pattern blocks as pizza toppings
Pizza top spinner

Object: Cover the 6 pizzas on the game board with toppings.

- 1 Player 1 spins the spinner to choose topping. Place shape topping on their Pizza 1.
- 2 Player 2 spins and places shape topping on their Pizza 1.
- 3 Continue spinning and placing shape topping on Pizza 1 until completely covered.
- 4 If last shape topping is too large, change to a smaller shape topping that covers the pizza.
- 5 Each player must completely fill one pizza before moving on to the next pizza.
- 6 Continue taking turns spinning and covering pizzas until both players have completely covered all 6 pizzas.
- 7 When game is finished, trace shape toppings on pizzas and color in.
- 8 If you have time, play the game again.



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B

PATTERN BLOCK PIZZA

FOLD / GLUE

A

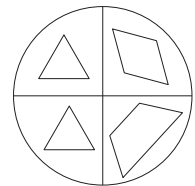
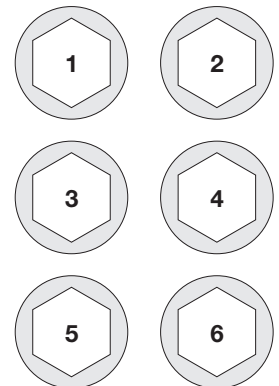
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