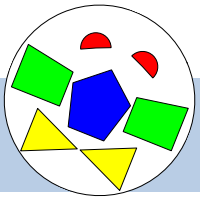
Pizza Pizzazz!



In this three-player game, finish the pizza started by the Chef. Make it symmetric to please your customers.

Strands:

Number & Quantity	
Algebra	
Functions	
Geometry	X
Statistics & Probability	

Materials Needed:

- *Dough*: large felt circles, squares, and hearts, one per player
- *Toppings*: small shapes in a variety of solid colors, at least 4 of each shape in each color per player
- *Pizza Pizzazz* spinner
- Paper clip
- Pen

Where:

Outside	
Inside	X
On-line	
On-site	

Set-Up:

- Give each player one set of *Dough* shapes. Place *Toppings* on the table.
- Each player has a role: Chef, Assistant, and Customer.

Object of the Game: Create symmetric "pizzas" and determine lines of symmetry for pre-made shapes.

Playing the Game:

1. The Chef: Begin with the large *Dough* circle. Spin the spinner. The number you get determines the amount of toppings to place on half the pizza in any design you choose. You know where the line of symmetry is but do not share that information.
2. The Assistant: The Chef is too busy to finish the pizza, so the Assistant takes over. You finish the pizza by placing *Toppings* so that the final pizza has a line of symmetry. Both shapes and colors of shapes are important!
3. The Customer: Once the Assistant is done, the pizza goes to the Customer who judges whether or not the pizza is symmetrical and states reasons.
4. Scoring:
   - If the Customer judges the pizza to be perfectly symmetrical and can explain why, the Assistant earns 2 points and the Chef earns 1 point.
   - If the Customer judges that the pizza is not symmetrical and can explain why, the Chef earns 2 points, the Assistant earns 0 points, and the Customer earns 1 point.
   - Keep track of points.
5. a. Rotate roles to the left.
   b. Repeat Steps 1 through 5a until each player has taken on each role.
   c. Move on to Round 2 (Square *Dough*) then Round 3 (Heart *Dough*) after completing a round.

To Win: The player with the most points wins.

Think About It:

6. How can you tell where to find the line of symmetry of a figure?
7. If you know where a line of symmetry is, how can you place two same-size shapes (of the same color) so that they are symmetric across the line of symmetry?

Variations:

More Dough: Use more intricate symmetric shapes as the *Dough*. Play as above.

Play Simultaneously: Each person begins with a Circle *Dough* and designs a pizza as above. Pizzas are passed to the left, so each player is now the Assistant. Pizzas are passed to the left once more, so each player is now the Customer. Play as above. Continue with Rounds 2 and 3.

Place Pieces on the Whole Pizza: The Chef can place *toppings* anywhere on the dough, the Assistant must define the line of symmetry and reflect all the *toppings* across it.

Rotational Symmetry: The Chef places the *Toppings* on one quarter of the pizza. The Assistant uses rotational symmetry to finish the pizza instead of reflective symmetry. Rotate 90° about the middle point of the *Dough*.

Helpful Hints:

- Begin by finding the line of symmetry you need to use, mark it with a pencil, string, or piece of uncooked spaghetti.
- Remember that the *Toppings* should be placed so that each shape is reflected across a line of symmetry.

***Pizza Pizzazz* Spinner:**

To use the spinner, place the tip of a pen through the loop of a paper clip with the point of the pen at the center of the spinner. Flick the paper clip to spin it. If the tip of the paper clip lands on a line, spin again.