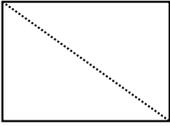EZ Tangrams: Area and Perimeter Investigation

1. What is the shape of your notecard?
2. What are its dimensions?
3. What is its area?
4. What is its perimeter?

Cut your notecard on a diagonal to create two new shapes

5. What kind of shapes are these?
6. What is the area of each one?
7. What is the perimeter of each one?

Place the matching edges of these two triangles together in different ways to create other shapes.

8. In the table below, draw a picture of each difference shape you can make, identify and record its most specific name, and determine its area and perimeter. You should be able to come up with at least six different shapes using only the two triangles:

Picture of Shape	Name	Area (square inches)	Perimeter (inches)
	Rectangle	6 X 4 = 24	6 + 6 +4 + 4 = 20

9. Is it possible for shapes to have the same area and different perimeters?

10. Is it possible for shapes to have the same perimeter and different areas?

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3.MD.5. Recognize area as an attribute of plane figures and understand concepts of area measurement.

3.MD.7d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

3.MD.8. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

3.G.1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g.,quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Mathematical Practices

1. Make sense of problems and persevere in solving them.

2. Reason abstractly and quantitatively.

3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.

3.G.2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*

5.G.3. Understand that attributes belonging to a category of two dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*

6.G1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

8.G. 7. Apply the **Pythagorean Theorem** to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.