

Edge Count Sort

Name the new shape by its outside sides.

3.MG.4.f "Combine no more than three polygons, where each has three or four sides, and name the resulting polygon (triangles, quadrilaterals, pentagons, hexagons, octagons)."

NAME _____

DATE _____

COUNT OUTSIDE

Name the new polygon by counting the sides on its outside edge. A side where pieces touch is inside, so do not count it.

Put your finger on the rim of a combined shape and trace one trip all the way around.

COUNT PIECES

This choice adds sides on the separate pieces. That does not name the one new polygon.

When two tiles touch along an edge, that touching edge is hidden inside the new outline.

1 SORT _____ 8 items

Circle OUTSIDE or PIECES for each item, then choose two items and explain how you knew.

1. Two triangles share one side. I count 4 sides around the outside and name the result a quadrilateral. OUTSIDE PIECES
2. A triangle and a quadrilateral share one side. I count all 7 sides on the pieces to name the new shape. OUTSIDE PIECES
3. Three quadrilaterals are joined. I add $4 + 4 + 4$ to find the shape's name. OUTSIDE PIECES
4. Three triangles are joined in a chain. I count 5 outside sides and name the result a pentagon. OUTSIDE PIECES
5. Two quadrilaterals share one side. I count 6 sides around the outside and name the result a hexagon. OUTSIDE PIECES
6. Two triangles share one side. I add $3 + 3$ to name the new shape. OUTSIDE PIECES
7. Three triangles make one large triangular outline. I count 3 outside sides and name the result a triangle. OUTSIDE PIECES
8. Three quadrilaterals are joined in a chain. I count 8 outside sides and name the result an octagon. OUTSIDE PIECES

2**PROVE IT**

Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

ITEM # _____ HOW I KNEW _____

ITEM # _____ HOW I KNEW _____

3**MAKE YOUR OWN**

One of each

Write one new example of an OUTSIDE choice and one new example of a PIECES choice.

OUTSIDE

PIECES

CHALLENGE

Draw a triangle, a quadrilateral, and another triangle in a chain, with each shape sharing one full side with the next shape. Count the outside sides and write the polygon name.

PART 1 • SORT

#	ITEM	CATEGORY	WHY
1	Two triangles share one side. I count 4 sides around the outside and name the result a quadrilateral.	OUTSIDE	Four outer sides make a quadrilateral.
2	A triangle and a quadrilateral share one side. I count all 7 sides on the pieces to name the new shape.	PIECES	It adds the sides of the separate pieces.
3	Three quadrilaterals are joined. I add $4 + 4 + 4$ to find the shape's name.	PIECES	It counts piece sides instead of the outside boundary.
4	Three triangles are joined in a chain. I count 5 outside sides and name the result a pentagon.	OUTSIDE	Five outer sides make a pentagon.
5	Two quadrilaterals share one side. I count 6 sides around the outside and name the result a hexagon.	OUTSIDE	Six outer sides make a hexagon.
6	Two triangles share one side. I add $3 + 3$ to name the new shape.	PIECES	It adds the sides on the two pieces.
7	Three triangles make one large triangular outline. I count 3 outside sides and name the result a triangle.	OUTSIDE	Three outer sides make a triangle.
8	Three quadrilaterals are joined in a chain. I count 8 outside sides and name the result an octagon.	OUTSIDE	Eight outer sides make an octagon.

PART 2 • PROVE IT

Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 • MAKE YOUR OWN (SAMPLE ANSWERS)

- **OUTSIDE:** A triangle, a quadrilateral, and a triangle form a chain. I count 6 outside sides, so the new shape is a hexagon.
- **PIECES:** A triangle and two quadrilaterals are joined. I add $3 + 4 + 4$ to name the shape.

Challenge: The shape has 6 outside sides, so it is a hexagon.

Items 1, 4, 5, 7, and 8 are OUTSIDE. Items 2, 3, and 6 are PIECES. For Part 2, students should state that they counted only the outer boundary or explain that adding the sides of separate pieces is not the correct method.