

Shape Sort Detectives

Use side and closure clues to sort figures.

3.MG.4 "The student will identify, describe, classify, compare, combine, and subdivide polygons. Describe a polygon as a closed plane figure composed of at least three line segments that do not cross..."

NAME _____

DATE _____

POLYGON

A polygon is a closed plane figure made of at least three straight line segments. Its segments do not cross.

A stop sign has eight straight edges that make a closed shape with no crossings.

NOT A POLYGON

A nonpolygon misses at least one polygon rule. It may be open, have a curved side, or have crossing segments.

A circle is not made of straight line segments.

1 SORT

8 items

Circle POLYGON or NONPOLYGON for each item, then in Part 2 choose two items and tell which rule word or words prove each choice.

1. A closed plane figure made of 4 straight line segments that do not cross. POLYGON NONPOLYGON
2. A closed plane figure made of 5 straight line segments that do not cross. POLYGON NONPOLYGON
3. A closed shape with 4 straight sides and 1 curved side. POLYGON NONPOLYGON
4. A closed plane figure made of 6 straight line segments that do not cross. POLYGON NONPOLYGON
5. Three straight line segments that do not meet to close a shape. POLYGON NONPOLYGON
6. A closed bow-tie shape made of 4 straight line segments that cross in the middle. POLYGON NONPOLYGON
7. A closed plane figure made of 3 straight line segments that do not cross. POLYGON NONPOLYGON
8. A closed plane figure made of 8 straight line segments that do not cross. POLYGON NONPOLYGON

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

Part 3 MAKE YOUR OWN: Write one new example of a polygon and one new example of a nonpolygon.

POLYGON

NONPOLYGON

CHALLENGE

Draw a quadrilateral. Draw one line segment from one corner to the opposite corner, then name the two new polygons.

PART 1 • SORT

#	ITEM	CATEGORY	WHY
1	A closed plane figure made of 4 straight line segments that do not cross.	POLYGON	It is closed, has at least three straight line segments, and the segments do not cross.
2	A closed plane figure made of 5 straight line segments that do not cross.	POLYGON	It is closed, has at least three straight line segments, and the segments do not cross.
3	A closed shape with 4 straight sides and 1 curved side.	NONPOLYGON	It has a curved side, so it is not made only of straight line segments.
4	A closed plane figure made of 6 straight line segments that do not cross.	POLYGON	It is closed, has at least three straight line segments, and the segments do not cross.
5	Three straight line segments that do not meet to close a shape.	NONPOLYGON	The figure is open, not closed.
6	A closed bow-tie shape made of 4 straight line segments that cross in the middle.	NONPOLYGON	Its line segments cross.
7	A closed plane figure made of 3 straight line segments that do not cross.	POLYGON	It is closed, has three straight line segments, and the segments do not cross.
8	A closed plane figure made of 8 straight line segments that do not cross.	POLYGON	It is closed, has at least three straight line segments, and the segments do not cross.

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)

- **POLYGON:** A closed figure made of 7 straight line segments that do not cross.
- **NONPOLYGON:** A closed figure made of 5 straight line segments that cross in the center.

Challenge: A square with a diagonal from one corner to the opposite corner makes two triangles.

For Part 2, accept explanations that correctly name closure, straight line segments, or crossing segments. For Part 3, accept different valid examples that match each category rule.