

## Classifying Two-Dimensional Shapes

A polygon is a closed flat shape with straight sides. The names come from how many sides there are: 3 sides = triangle, 4 = quadrilateral, 5 = pentagon, 6 = hexagon, 8 = octagon.


| Polygon       | Sides | Polygon  | Sides |
|---------------|-------|----------|-------|
| Triangle      | 3     | Hexagon  | 6     |
| Quadrilateral | 4     | Heptagon | 7     |
| Pentagon      | 5     | Octagon  | 8     |

### Key Concepts

1. A **polygon** is a closed flat shape with all straight sides. Curved or unclosed shapes don't count.
2. The polygon's *name* tells you the number of sides: tri-(3), quad-(4), pent-(5), hex-(6), hept-(7), oct-(8).
3. **Vertices** are the corner points where two sides meet. A polygon has the same number of vertices as sides.
4. A **regular** polygon has all sides the same length AND all angles equal.

### Worked Examples

① A shape has 6 straight sides. What is it called?

 Six sides means hexagon ("hex" = 6).


 **Answer:** *Hexagon*

② Is a circle a polygon?

 Polygons must have straight sides. A circle is curved, so no, it's not a polygon.

 **Answer:** *No*

③ Name a shape that has 4 sides and 4 right angles.

 Four sides means quadrilateral. With 4 right angles, the shape is a rectangle (or a square if all sides are equal).

 **Answer:** *Rectangle (or square)*




### Practice Problems

Name the shape or count.

1. 3 sides  $\Rightarrow$  Name? \_\_\_\_\_
2. Hexagon  $\Rightarrow$  How many sides? \_\_\_\_\_
3. 8 sides  $\Rightarrow$  Name? \_\_\_\_\_
4. Pentagon  $\Rightarrow$  How many sides? \_\_\_\_\_
5. 4 sides, all equal  $\Rightarrow$  Name? \_\_\_\_\_
6. Octagon  $\Rightarrow$  How many vertices? \_\_\_\_\_

- \_\_\_\_\_
7. Is a curved shape a polygon? \_\_\_\_\_
8. Triangle  $\Rightarrow$  How many vertices? \_\_\_\_\_
9. 5 sides  $\Rightarrow$  Name? \_\_\_\_\_
10. Quadrilateral  $\Rightarrow$  How many sides? \_\_\_\_\_
11. 4 sides, 4 right angles  $\Rightarrow$  Name? \_\_\_\_\_
12. A stop sign has \_\_\_ sides. \_\_\_\_\_

### Study Tips

-  Memorize the prefixes: tri-(3), quad-(4), pent-(5), hex-(6), oct-(8). They show up in lots of math words.
-  A polygon's number of vertices equals its number of sides. Both go together.
-  "Regular" means equal sides AND equal angles. A regular hexagon has 6 equal sides; a regular triangle is the equilateral triangle.

### Word Problems

1. Anna draws a shape with 5 sides that are all the same length. What is the name of the shape?  
Answer: \_\_\_\_\_
2. A classroom has 3 triangular flags and 2 rectangular posters. How many sides do all the shapes have in total?  
Answer: \_\_\_\_\_

**Answer Key — with Friendly Explanations****Practice Problems**

1. 3 sides = triangle.

 **Answer:** *Triangle*

2. Hex- means 6.

 **Answer:** 6

3. 8 sides = octagon.

 **Answer:** *Octagon*

4. Pent- means 5.

 **Answer:** 5

5. 4 equal sides = square (or rhombus if no right angles).

 **Answer:** *Square (or rhombus)*

6. 8 sides = 8 vertices.

 **Answer:** 8

7. No — polygons must have straight sides.

 **Answer:** *No*

8. 3 sides = 3 vertices.

 **Answer:** 3

9. 5 sides = pentagon.

 **Answer:** *Pentagon*

10. Quad- means 4.

 **Answer:** 4

11. Rectangle (a square is a special kind).

 **Answer:** *Rectangle*

12. A stop sign is an octagon.

 **Answer:** 8

**Word Problems**

1. Five equal sides → regular pentagon.

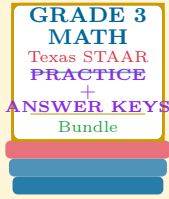
 **Answer:** *Regular pentagon*

2.  $3 \times 3 + 2 \times 4 = 9 + 8 = 17$  sides total.

 **Answer:** 17 sides

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