

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.

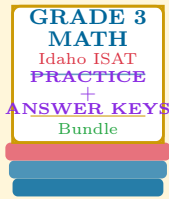
 **Answer:** *Regular pentagon*

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

 **Answer:** 17 sides

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