

Polygons

1. Answer the following questions :

- a. Define a polygon. How is it different from a circle?
- b. How many sides does a polygon have? Give examples of polygons with different numbers of sides.
- c. What is the difference between regular and irregular polygons? Draw an example of each.
- d. Draw a triangle and a quadrilateral. Count the number of sides and angles in each.
- e. If a polygon has 12 sides, what is it called?
- f. A regular polygon has all its sides of the same length and all its angles of the same size. If a regular polygon has an interior angle of 120 degrees, how many sides does it have?
- g. Can a polygon have curved sides? Explain why or why not.
- h. Consider a heptagon (a polygon with 7 sides). If one angle measures 128 degrees, and all the other angles are equal, what would be the measure of each of the other angles?
- i. How many diagonals does a hexagon (6-sided polygon) have? Draw and count.
- j. What is a convex polygon? Draw an example.
- k. What is a concave polygon? How is it different from a convex polygon? Draw an example.

2. Fill in the blanks :

- a. A polygon is a closed figure with _____ straight sides.
- b. The _____ of a polygon is the total length of its boundary.
- c. A polygon with three sides is called a _____.
- d. A polygon with four sides is called a _____.

- e. A _____ is a polygon with all sides and angles of equal measure.
- f. A _____ is a five-sided polygon.
- g. A hexagon has _____ sides.
- h. An octagon has _____ sides.
- i. A polygon that has sides of different lengths is called an _____ polygon.
- j. A polygon with all interior angles less than 180 degrees is called a _____ polygon.

3. True or False:

- a. A polygon is a 2-dimensional figure.
- b. All sides of a polygon must be straight.
- c. A shape with curves can also be classified as a polygon.
- d. A triangle is considered a polygon.
- e. A circle is a type of polygon.
- f. A pentagon has 4 sides.
- g. The total sum of the interior angles of a quadrilateral is 360 degrees.
- h. The sum of the exterior angles of any polygon is always 360 degrees.
- i. A decagon has 12 sides.
- j. Polygons can only have sides of equal length.

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4. Choose the correct option.

I. What is a polygon?

- a) A shape with four sides
- b) A shape with three or more straight sides and angles
- c) A shape with curved sides
- d) A shape with two straight sides

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II. How many sides does a hexagon have?

a) 5

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b) 6

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c) 7

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d) 8

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III. Which of the following is not a polygon?

a) Square

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b) Circle

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c) Triangle

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d) Pentagon

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IV. A regular polygon is a polygon:

a) That has all sides of the same length

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b) That has all angles of the same measure

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c) That has both sides and angles of the same measure

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d) That has different sides and angles

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V. A polygon with ten sides is called a:

a) Hexagon

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b) Heptagon

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c) Decagon

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d) Nonagon

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VI. What do you call a polygon with all sides and all angles equal?

a) Regular polygon

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b) Irregular polygon

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c) Convex polygon

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d) Concave polygon

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VII. A polygon with 12 sides is known as:

a) Dodecagon

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b) Undecagon

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c) Decagon

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d) Nonagon

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VIII. In a regular octagon, each interior angle is:

a) 90 degrees

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b) 135 degrees

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c) 108 degrees

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d) 120 degrees

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IX. The sum of the exterior angles of any polygon is:

a) 90 degrees

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b) 180 degrees

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c) 270 degrees

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d) 360 degrees

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