

# Class 4 Geometry Worksheet

By Thinking Juggernaut

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Total Marks: 24

## Advanced Geometry Concepts

### Types of Triangles (by sides):

- **Equilateral Triangle:** All 3 sides equal, all angles  $60^\circ$
- **Isosceles Triangle:** 2 sides equal, 2 angles equal
- **Scalene Triangle:** All sides different, all angles different

### Types of Triangles (by angles):

- **Right-angled Triangle:** One angle is  $90^\circ$
- **Acute-angled Triangle:** All angles less than  $90^\circ$
- **Obtuse-angled Triangle:** One angle greater than  $90^\circ$

### Special Quadrilaterals:

- **Square:** 4 equal sides, 4 right angles
- **Rectangle:** Opposite sides equal, 4 right angles
- **Rhombus:** 4 equal sides, opposite angles equal
- **Parallelogram:** Opposite sides equal and parallel
- **Trapezium:** One pair of parallel sides

### 3D Shapes (Solids):

- **Cube:** 6 square faces, 12 edges, 8 vertices
- **Cuboid:** 6 rectangular faces, 12 edges, 8 vertices
- **Sphere:** No flat faces, no edges, no vertices
- **Cylinder:** 2 circular faces, 1 curved surface
- **Cone:** 1 circular face, 1 curved surface, 1 vertex

### Perimeter: The total distance around the outside of a 2D shape

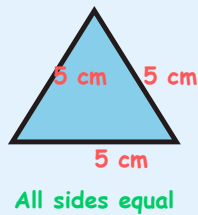
- **Square:** Perimeter =  $4 \times \text{side}$
- **Rectangle:** Perimeter =  $2 \times (\text{length} + \text{width})$



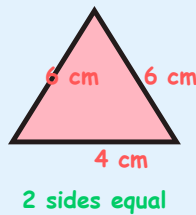
### Sample Problem

**Problem:** Identify the type of triangle based on its sides.

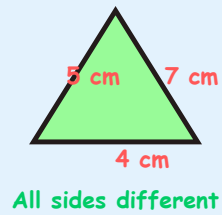
Equilateral



Isosceles



Scalene



**Remember:**

- Equilateral = All Equal
- Isosceles = Two Equal
- Scalene = All Different

## Part A: Warm-up Questions

★ Easy Level

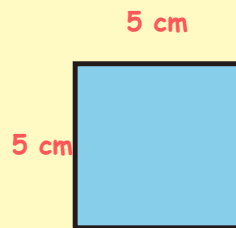
1. What type of triangle has all sides equal?

2. How many faces does a cube have?

3. True or False: A rectangle has 4 right angles.

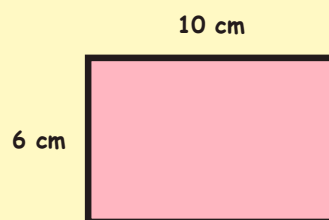
☐ True   ☐ False

4. What is the perimeter of a square with side 5 cm?



Perimeter = \_\_\_\_\_ cm

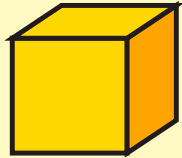
5. Name the quadrilateral shown:



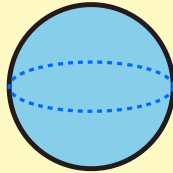
Shape name: \_\_\_\_\_

6. How many vertices does a cuboid have?

7. Which 3D shape has no flat faces?



A) Cube



B) Sphere



C) Cone

Answer: \_\_\_\_\_

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8. Complete: A rhombus has \_\_\_\_\_ equal sides.

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## Part B: Practice Questions

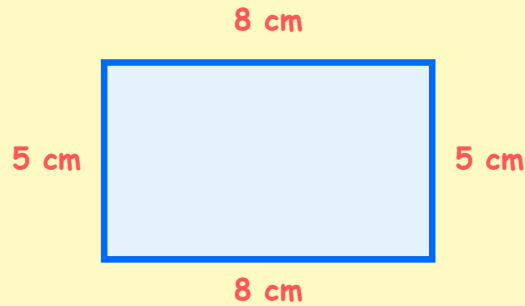
☆☆ Medium Level

9. Match the triangles with their types:

Column A (Description)	Column B (Type)
a) Triangle with 2 equal sides	i) Scalene Triangle
b) Triangle with all sides different	ii) Equilateral Triangle
c) Triangle with all sides equal	iii) Isosceles Triangle

Write your answers: a-\_\_\_\_, b-\_\_\_\_, c-\_\_\_\_

10. Find the perimeter of a rectangle with length 8 cm and width 5 cm.



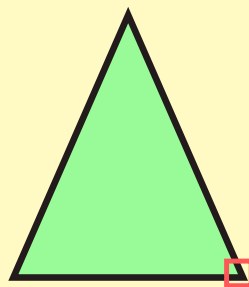
Working: Perimeter =  $2 \times (\text{ } + \text{ })$

Perimeter =  $2 \times \text{ } = \text{ } \text{ cm}$

11. True or False: An isosceles triangle can have a right angle.

☐ True   ☐ False

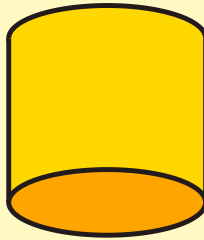
12. Identify the type of triangle by its angles:



One angle =  $90^\circ$

Type of triangle: \_\_\_\_\_

13. How many edges does a cylinder have?



Number of edges: \_\_\_\_\_

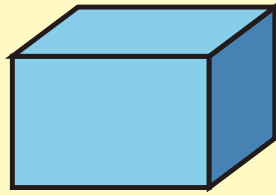
14. What is the name of a quadrilateral with only one pair of parallel sides?

15. A square park has a side of 12 meters. What is the perimeter of the park?

Perimeter =  $4 \times \text{side}$

Perimeter =  $4 \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$  meters

16. How many faces, edges, and vertices does a cuboid have?



Faces: \_\_\_\_\_

Edges: \_\_\_\_\_

Vertices: \_\_\_\_\_

17. Draw a parallelogram and mark its parallel sides with arrows:



18. Which of these is NOT a property of a square?

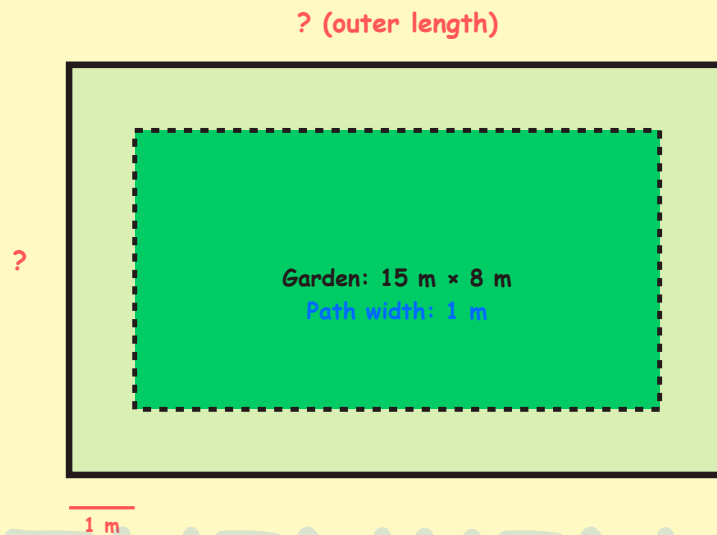
- A) All sides are equal
- B) All angles are right angles
- C) Opposite sides are parallel
- D) Only 2 sides are equal

Answer: \_\_\_\_\_

## Part C: Challenge Questions

★ ★ ★ Hard Level

19. A rectangular garden is 15 m long and 8 m wide. A path of 1 m width runs around the outside. What is the perimeter of the outer boundary?

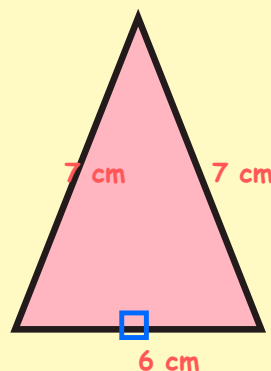


Outer length =  $15 + 1 + 1 =$  \_\_\_\_\_ m

Outer width =  $8 + 1 + 1 =$  \_\_\_\_\_ m

Perimeter =  $2 \times (\text{_____} + \text{_____}) =$  \_\_\_\_\_ m

20. Classify this triangle by BOTH sides AND angles:



By sides: \_\_\_\_\_ triangle (2 sides are equal)



By angles: \_\_\_\_\_ triangle (has one  $90^\circ$  angle)

**21.** A cube has a total edge length of 48 cm. What is the length of one edge?

Hint: A cube has 12 edges, all equal

Working: Total edge length  $\div$  Number of edges

One edge = \_\_\_\_\_  $\div$  \_\_\_\_\_ = \_\_\_\_\_ cm

**22.** Complete the table about 3D shapes:

3D Shape	Faces	Edges	Vertices
Cube	6	_____	8
Cone	_____	0	1
Cylinder	2	_____	0

**23.** Real-life Problem: A rectangular playground is 50 m long and 30 m wide. The school wants to put a fence around it. If fencing costs ₹25 per meter, what is the total cost?

Step 1: Find the perimeter

Perimeter =  $2 \times (\text{_____} + \text{_____}) = \text{_____}$  m

Step 2: Calculate the cost

Total cost = \_\_\_\_\_ m  $\times$  ₹25 = ₹\_\_\_\_\_

**24.** Puzzle Challenge: Which quadrilateral am I?

- ◆ I have 4 sides
- ◆ My opposite sides are equal
- ◆ My opposite sides are parallel
- ◆ All my angles are right angles
- ◆ I am NOT a square

I am a \_\_\_\_\_

Draw me below:



# THINKING

## | Answer Key

### Part A: Warm-up Questions

1. Equilateral Triangle
2. 6 faces
3. True
4. Perimeter =  $4 \times 5 = 20$  cm
5. Rectangle (opposite sides are equal: 10 cm and 6 cm)
6. 8 vertices
7. B) Sphere (it's perfectly round with no flat faces, edges, or vertices)
8. 4 equal sides

## Part B: Practice Questions

9. a-iii (Isosceles Triangle), b-i (Scalene Triangle), c-ii (Equilateral Triangle)
10. Perimeter =  $2 \times (8 + 5) = 2 \times 13 = 26$  cm
11. True (An isosceles right-angled triangle has two equal sides and one  $90^\circ$  angle)
12. Right-angled Triangle (it has one angle equal to  $90^\circ$ )
13. 0 edges (a cylinder has 2 circular edges but these are curved, not straight edges)
14. Trapezium (it has exactly one pair of parallel sides)
15. Perimeter =  $4 \times 12 = 48$  meters
16. Faces: 6, Edges: 12, Vertices: 8
17. Student should draw a parallelogram with opposite sides marked with matching arrows to show they are parallel
18. D) Only 2 sides are equal (This is NOT a property of a square; all 4 sides of a square are equal)

## Part C: Challenge Questions




19. Outer length =  $15 + 1 + 1 = 17$  m, Outer width =  $8 + 1 + 1 = 10$  m, Perimeter =  $2 \times (17 + 10) = 2 \times 27 = 54$  m
20. By sides: Isosceles triangle, By angles: Right-angled triangle (It's an isosceles right-angled triangle)
21. One edge =  $48 \div 12 = 4$  cm
22. Cube: 12 edges; Cone: 1 face; Cylinder: 0 edges
23. Perimeter =  $2 \times (50 + 30) = 2 \times 80 = 160$  m; Total cost =  $160 \times ₹25 = ₹4,000$

**24.** Rectangle (Student should draw a rectangle with opposite sides equal but not all sides equal)



## Scoring Guide

Total Questions: 24 | Total Marks: 24

Score Range	Performance Level	What to Do Next
20-24	 Excellent!	<b>Outstanding performance!</b> You've mastered advanced geometry. <b>Next steps:</b> Start learning about area calculations, explore more 3D shapes (pyramids, prisms), practice coordinate geometry basics, learn about angles in polygons, and explore geometric transformations (rotation, reflection, translation).
15-19	 Very Good!	<b>Great job!</b> You understand geometry well. <b>Focus on:</b> Review the properties of different types of triangles. Practice perimeter problems daily. Study 3D shapes by looking at objects around you. Master the formula for perimeter of rectangles and squares. Draw different quadrilaterals and label their properties.
10-14	 Good Effort!	<b>Good start!</b> You're learning geometry. <b>Work on:</b> Understanding the difference between types of triangles (equilateral, isosceles, scalene). Learn perimeter formulas for square and rectangle. Count faces, edges, and vertices of 3D shapes using actual objects. Practice identifying different quadrilaterals and their unique properties.
0-9	Keep Trying!	<b>Don't give up!</b> Geometry takes practice. <b>Start with:</b> Learning one triangle type at a time using drawings and real objects. Master the perimeter formula for squares first ( $4 \times \text{side}$ ). Hold and examine 3D objects (boxes, balls, cans) to understand their properties. Focus on squares and rectangles before moving to other quadrilaterals. Ask your teacher for extra help and practice basic concepts daily.



### Tips for Mastering Advanced Geometry:

- **Triangle Classification:**
  - By sides: Equilateral (all equal), Isosceles (2 equal), Scalene (all different)
  - By angles: Right ( $90^\circ$ ), Acute (all  $< 90^\circ$ ), Obtuse (one  $> 90^\circ$ )

- A triangle can be classified in both ways! (e.g., isosceles right-angled triangle)
- **Master Perimeter Formulas:**
  - Square:  $P = 4 \times \text{side}$
  - Rectangle:  $P = 2 \times (\text{length} + \text{width})$  OR add all 4 sides
  - Any polygon: Add all the sides together
- **Remember 3D Shapes:**
  - Cube: 6 faces, 12 edges, 8 vertices (like a dice)
  - Cuboid: 6 faces, 12 edges, 8 vertices (like a box)
  - Sphere: 0 faces, 0 edges, 0 vertices (like a ball)
  - Cylinder: 2 faces, 0 edges, 0 vertices (like a can)
  - Cone: 1 face, 0 edges, 1 vertex (like ice cream cone)
- **Quadrilateral Family Tree:** All are 4-sided but with different properties:
  - Square: All sides equal, all angles  $90^\circ$
  - Rectangle: Opposite sides equal, all angles  $90^\circ$
  - Rhombus: All sides equal, opposite angles equal
  - Parallelogram: Opposite sides equal and parallel
  - Trapezium: Only one pair of parallel sides

🌟 Great Job Completing This Worksheet! 🌟

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