2D Shapes

Line Properties

Lines that define shapes.

Parallel lines: do they meet?

Lines go in same direction
They never meet

Answer: Never meet

Perpendicular lines

They meet at exactly 90°
Shown with a small square

Answer: 90° angle

Bisect a line segment

Cut into 2 equal halves
Midpoint is halfway

Answer: 2 equal parts

Shape Properties

Equilateral triangle

3 equal sides
All angles = 60°

Answer: 60°, 60°, 60°

Isosceles triangle

2 equal sides
2 equal base angles

Answer: 2 sides equal

Name: 4 equal sides, no 90°

Not a square (no right angles)
4 equal sides → rhombus

Answer: Rhombus

Key Words

Polygon: closed shape with straight sides
Regular: all sides and angles equal
Vertex: corner where two sides meet
Parallel: lines that never meet
Perpendicular: lines that meet at 90°
Symmetry: line or rotational
Quadrilateral: 4-sided shape

Symmetry

Lines of symmetry: square

Fold horizontally: yes
Fold vertically: yes
Fold diagonally: yes (×2)

Answer: 4 lines

Rotational symmetry: rectangle

Looks same after 180° rotation
Looks same after 360°

Answer: Order 2

Lines of symmetry: equilateral

3 fold lines — one per vertex

Answer: 3 lines

Quadrilaterals

Name: 2 pairs of parallel sides, no 90°

Parallelogram: parallel opp. sides

Answer: Parallelogram

Name: exactly 1 pair of parallel sides

Not parallelogram — only 1 pair

Answer: Trapezium

Name: 2 pairs of equal adjacent sides

Adjacent = next to each other
Kite shape

Answer: Kite

2D Shapes

(continued)

More Symmetry

Symmetry of a regular hexagon

6 equal sides → 6 fold lines
Rotates to look same 6 times

Answer: 6 lines, order 6

Symmetry of a parallelogram

Diagonal folds do NOT work
Rotation by 180° works

Answer: 0 lines, order 2

Symmetry of a circle

Infinite fold lines through centre
Rotates to look same at any angle

Answer: Infinite

Mixed Shape Problems

Scalene triangle properties

No equal sides
No equal angles

Answer: No equal parts

How many right angles in a rectangle?

All 4 angles are 90°

Answer: 4 right angles

Isosceles △: one angle = 50°. Others?

50+x+x=180
2x=130

Answer: 65° each

Shape Practice

Classify: sides 5, 5, 3 cm

2 equal sides → isosceles

Answer: Isosceles

Order of rotational symmetry: square

Looks same at 90°,180°,270°,360°

Answer: Order 4

Lines of symmetry: isosceles △?

1 fold line down the middle

Answer: 1 line

Angle Properties

Angles in a triangle sum to

a + b + c = 180°

Answer: 180°

Angles in a quadrilateral sum to

Split into 2 triangles: 2×180

Answer: 360°

Interior angle of regular hexagon

Sum=(6−2)×180=720°
Each: 720÷6

Answer: 120°

Mixed Review

Name shape: 4 sides, all equal, all 90°

4 equal sides AND right angles

Answer: Square

Name shape: 4 sides, opp sides equal, all 90°

Opposite sides equal

Answer: Rectangle

How many sides has a regular pentagon?

Penta = 5

Answer: 5 sides

Try It Yourself!

1. Name a quadrilateral with 4 equal sides and 4 right angles.
2. How many lines of symmetry does an isosceles triangle have?
3. Rotational symmetry order of a regular hexagon?
4. Name the triangle: sides 7 cm, 7 cm, 7 cm.
5. Name the shape: exactly one pair of parallel sides.
6. True or false: a rhombus has 4 right angles.
7. How many lines of symmetry does a parallelogram have?
8. Sum of interior angles of a quadrilateral?