

# C4.1 Geometrical terms

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_ **Total: 20 marks**

**KEY WORDS** parallel 平行 • perpendicular 垂直 • right angle 直角 • square 正方形 • arc 弧

## Objective

Use geometrical terms to solve Core IGCSE Mathematics problems.

**You must be able to:**

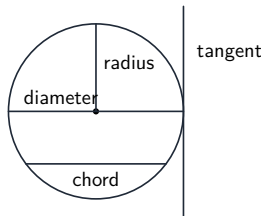
- Use precise names for plane shapes and solids
- Distinguish sides, vertices, edges and faces
- Justify classification from geometrical properties

## 1 Key knowledge and worked examples

### ■ Key knowledge: Geometrical terms

Parallel lines never meet; perpendicular lines meet at  $90^\circ$ . Acute angles are below  $90^\circ$ , obtuse angles between  $90^\circ$  and  $180^\circ$ , and reflex angles between  $180^\circ$  and  $360^\circ$ . An equilateral triangle has three equal sides; isosceles has two; scalene has none. A regular polygon has equal sides and angles. Similar shapes have the same shape; congruent shapes have the same shape and size.

### ■ Worked example: Geometrical terms



A circle's radius joins centre to circumference; a diameter passes through the centre and has length  $d = 2r$ . A chord joins two circumference points. A tangent touches at one point; an arc is part of the circumference. A sector is bounded by two radii and an arc; a segment by a chord and an arc.

- A rectangle has four right angles; a rhombus has four equal sides; a square has both. A parallelogram has two pairs of parallel sides; a trapezium has one pair.
- A cube has 6 square faces, 12 edges and 8 vertices. A prism has a uniform cross-section; a pyramid's side faces meet at an apex. Cylinders, cones and spheres have

curved surfaces.

- An angle such as  $ABC$  is at the middle letter, B. A hexagon has six sides; an octagon eight; a decagon ten.
- A kite has two pairs of adjacent equal sides. A pentagon has 5 sides and an octagon 8. An interior angle is inside a polygon; its adjacent exterior angle is outside, on an extended side.

### ■ Method check

Use the full defining property. A rectangle has four right angles; a parallelogram needs opposite sides parallel and need not have right angles.

## 2 Practice

**2.1** Classify  $38^\circ, 127^\circ, 230^\circ$  as acute, obtuse or reflex. [2]

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**2.2** A triangle has sides 5 cm, 5 cm and 8 cm. Name its type. Name a four-equal-sided quadrilateral with no right angles. [2]

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**2.3** State the number of faces and edges of a cube. [2]

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**2.4** Name the circle region bounded by two radii and an arc, and the line touching at one point. [2]

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3 Exam-style questions

3.1 Apply the geometrical terms methods below. Show working and include units where appropriate.

(a) A circle has radius 7 cm. Find its diameter and name a line through its centre joining two circumference points. [2]

(b) Name the region between a chord and its shorter arc. Explain how it differs from a sector. [2]

(c) Two rectangles measure  $3 \times 5$  cm and  $6 \times 10$  cm. State whether they are similar or congruent, and give the length scale factor. [2]

3.2 Shape A is a quadrilateral with two pairs of parallel opposite sides and no right angles. Solid B is a triangular prism.

(a) Give the most specific name guaranteed for A. State two properties of its opposite sides or angles. [3]

(b) State the numbers of faces, edges and vertices of B, and explain why it is a prism rather than a pyramid. [3]