

Exercise walk-through

C4.1

Geometrical terms

IGCSE Mathematics

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

The method

Method — Key knowledge: Geometrical terms

Parallel lines never meet; perpendicular lines meet at 90° . Acute angles are below 90° , obtuse angles between 90° and 180° , and reflex angles between 180° and 360° . 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.

Exercises 2.1·2.3

2.1 Classify 38° , 127° , 230° as acute, obtuse or reflex.

[2]

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]

2.3 State the number of faces and edges of a cube.

[2]

Exercises 2.1·2.3

2.1 Classify 38° , 127° , 230° as acute, obtuse or reflex.

[2]

2.1

- Compare with 90 and 180 degrees: **acute**, **obtuse**, **reflex**, respectively.

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]

2.2

- Two equal sides make it **isosceles**. The quadrilateral is a **rhombus**.

2.3 State the number of faces and edges of a cube.

[2]

2.3

- Six square faces meet along **12 edges**; there are **6 faces**.

Exercise 2.4

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

3 Exam-style questions

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3 Exam-style questions

2.4

- The region is a **sector**; the touching line is a **tangent**.

Exercise 3.1 (a)

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]

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(a)

- $d = 2r = 2(7) = \mathbf{14}$ cm; the line segment is a **diameter**.

Exercise 3.1 (b)

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

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

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(b)

- A **segment** has a chord boundary; a **sector** has two radius boundaries.

Exercise 3.1 (c)

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

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

Exercise 3.1 (c)

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

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

(c)

- Both lengths double, so **similar with scale factor 2**, but **not congruent** because their sizes differ.

Exercise 3.2 (a)

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]

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(a)

- A is a **parallelogram**.
- Its opposite sides are **equal in length** and its opposite angles are **equal**.
- No given information guarantees a rhombus.

Exercise 3.2 (b)

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

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

(b)

- B has **5 faces and 9 edges**, and **6 vertices**.
- It has two congruent parallel triangular ends with a constant cross-section, unlike a pyramid with one base and an apex.