

E4.1 Geometrical terms

Name: _____ Class: _____ Date: _____ **Total: 13 marks**

KEY WORDS reflex angle 优角 • interior angle 内角 • exterior angle 外角 • congruent 全等
• similar 相似

Objective

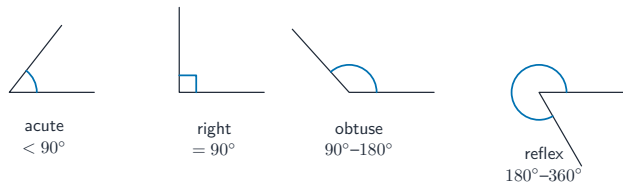
Build the skills to answer Extended exam questions on **geometrical terms** 几何术语 — naming **angles** 角, **triangles** 三角形, **quadrilaterals** 四边形, **polygons** 多边形, **solids** 立体图形 and the parts of a **circle** 圆, and using **congruent** 全等 and **similar** 相似 correctly.

You must be able to:

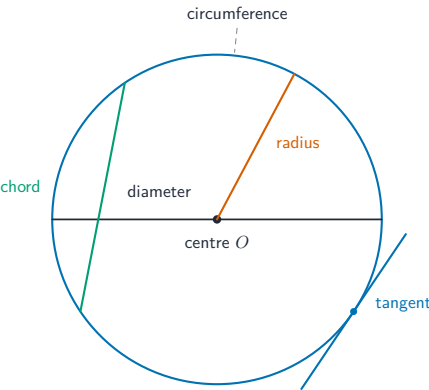
- name a shape or a part of a circle precisely, using the correct mathematical word
- use the interior and exterior angle rules for a polygon
- state what congruent and similar mean about sides and angles

1 Worked examples

■ The right word is the mark



Acute under 90°, obtuse between 90° and 180°, reflex over 180°



Radius, diameter, chord, tangent, arc, sector and segment all mean different things

- **Polygons**: interior angle sum = $(n-2) \times 180^\circ$; each exterior angle of a REGULAR polygon = $\frac{360^\circ}{n}$, and interior + exterior = 180° .
- **Triangles**: equilateral (all equal), isosceles (two equal), scalene (all different).
- **Quadrilaterals**: a **trapezium** has exactly one pair of parallel sides; a **rhombus** has four equal sides; a **kite** has two pairs of adjacent equal sides.
- **Congruent** means same shape AND same size; **similar** means same shape, one an enlargement of the other, so angles are equal and sides are in the same ratio.

Answer shapes (marked by **method marks** — M1 for a correct method, A1 for the correct answer): naming questions are single B marks — the exact word or nothing.

2 Practice

2.1 Write down the type of angle that measures 215°. [1]

2.2 A polygon has 8 sides. Write down its name, and find the sum of its interior angles.[2]

2.3 Write down the mathematical name for (a) a line from the centre of a circle to the circumference, and (b) a line joining two points on the circumference. [2]

3 Exam-style questions

3.1 A regular polygon has an exterior angle of 24° .

(a) Find the number of sides. [2]

(b) Find the size of each interior angle. [1]

3.2 Write down the mathematical name for each of the following.

(a) A quadrilateral with exactly one pair of parallel sides. [1]

(b) A triangle with all three sides of different lengths. [1]

(c) A solid with two parallel circular faces joined by a curved surface. [1]

3.3 Two shapes are congruent. State what this tells you about their sides and their angles. [2]

Solutions

Marking: **M1** a correct method, **A1** the correct answer.

Each answer shows the steps, then the **result**.

2.1

- it is greater than 180°

reflex

2.2

- 8 sides is an **octagon**

$$(8 - 2) \times 180 = \mathbf{1080^\circ}$$

2.3

- (a) **radius**
- (b) **chord** — a diameter is the special chord that passes through the centre

3.1

(a)

- the exterior angles of any polygon add to 360° , so $360 \div 24$

$$= \mathbf{15}$$

(b)

- interior = $180 - 24$

$$= \mathbf{156^\circ}$$

3.2

- (a) **trapezium**
- (b) **scalene**
- (c) **cylinder**

3.3

- corresponding sides are equal in length
- corresponding angles are equal, so the shapes are identical in size as well as shape
- note that similar shapes have equal angles but sides in a fixed ratio, which is the weaker condition