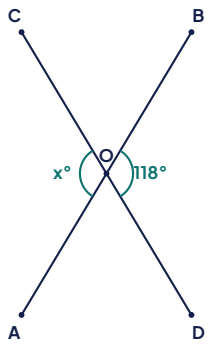
# Geometry and measure: Lower Secondary Maths worksheet

8 questions · 29 marks · Shapes and measurement, Angles and constructions

| Q | Answer and marking steps | Marks |
|---|---|---|
| 1 | Find the value of x in the diagram below, where two straight lines cross. | 2 |

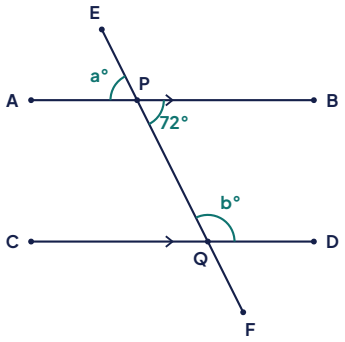



**Answer:** x = 118

- Recognise vertically opposite angles are equal — 1
- State x = 118 — 1

Angles and constructions

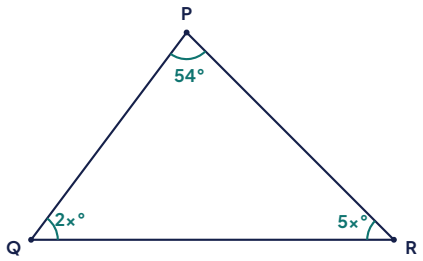
| | | |
|---|---|---|
| 2 | In the diagram, line AB is parallel to line CD. The transversal EF crosses both lines.<br>(a) Find the value of a°, giving a reason.<br>(b) Find the value of b°, giving a reason. | 4 |

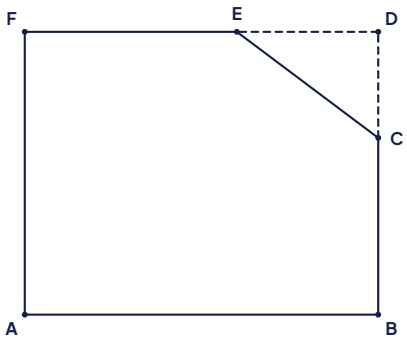
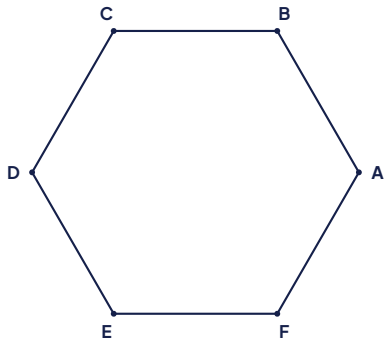



**Answer:** a = 72, b = 108

- a = 72° (vertically opposite angles) — 2
- b = 108° (co-interior/allied angles with 72°, sum to 180°) — 2

Angles and constructions

| Q | Answer and marking steps | Marks |
|---|---|---|
| 3 | A rectangular garden measures 12 m by 7.5 m. A path 1.5 m wide is built all the way round the outside of the garden (so the path forms a border around the rectangle).<br>(a) Find the area of the garden.<br>(b) Find the overall area of the garden plus the path.<br>(c) Find the area of just the path. | **5** |
| | **Answer:** (a) 90 m² (b) 157.5 m² (c) 67.5 m² | |
| | • Garden area = 12 × 7.5 = 90 m² | 1 |
| | • Overall length = 12 + 3 = 15 m, overall width = 7.5 + 3 = 10.5 m | 1 |
| | • Overall area = 15 × 10.5 = 157.5 m² | 2 |
| | • Path area = 157.5 − 90 = 67.5 m² | 1 |
| | Shapes and measurement | |
| 4 | A cylinder has a radius of 4 cm and a height of 10 cm. Calculate its volume, giving your answer to 1 decimal place. (Use π = 3.142) | **3** |
| | **Answer:** 502.7 cm³ | |
| | • Use formula $V = \pi r^2 h$ | 1 |
| | • Substitute: $V = 3.142 \times 4^2 \times 10$ | 1 |
| | • V = 502.7 cm³ (1 d.p.) | 1 |
| | Shapes and measurement | |
| 5 | Triangle PQR has angle P = 54° and angle Q = 2x°. Angle R is 3x° more than angle Q.<br>(a) Write an equation using the angle sum of a triangle and solve it to find x.<br>(b) Hence find the sizes of angle Q and angle R. | **5** |
| | <br>Not drawn to scale | |
| | **Answer:** (a) 54 + 2x + 5x = 180, so 7x = 126 and x = 18 (b) Angle Q = 36°, angle R = 90° | |
| | • Angle R = 2x + 3x = 5x | 1 |
| | • Equation: 54 + 2x + 5x = 180 | 1 |
| | • 7x = 126 | 1 |
| | • x = 18 | 1 |
| | • Angle Q = 36° and angle R = 90° | 1 |
| | Angles and constructions | |

| Q | Answer and marking steps | Marks |
|---|---|---|
| 6 | Using only a ruler and compasses, describe step by step how you would construct the perpendicular bisector of a line segment AB. You do not need to draw it, just explain the method clearly. | 3 |
| | **Answer:** Draw two arcs from A and B with the same radius (more than half of AB) above and below the line, so they cross at two points; join these two crossing points with a straight line — this line is the perpendicular bisector. | |
| | • Open compasses to a radius more than half of AB (same setting used from both ends) | 1 |
| | • Draw arcs from A and from B, above and below the line, so they intersect at two points | 1 |
| | • Join the two intersection points with a straight line to form the perpendicular bisector | 1 |
| | Angles and constructions | |
| 7 | The diagram shows a composite shape made from a rectangle with a right-angled triangle removed from one corner. The rectangle is 10 cm by 8 cm. The triangle removed has a base of 4 cm and a height of 3 cm.<br>(a) Find the area of the rectangle.<br>(b) Find the area of the triangle removed.<br>(c) Find the area of the remaining composite shape. | 4 |
| |  | |
| | **Answer:** (a) 80 cm² (b) 6 cm² (c) 74 cm² | |
| | • Rectangle area = 10 × 8 = 80 cm² | 1 |
| | • Triangle area = 1/2 × 4 × 3 = 6 cm² | 1 |
| | • Remaining area = 80 – 6 = 74 cm² | 2 |
| | Shapes and measurement | |
| 8 | A regular hexagon is shown below. Calculate the size of each interior angle. | 3 |
| |  | |
| | **Answer:** 120° | |
| | • Sum of interior angles = (6 – 2) × 180 = 720° | 1 |
| | • Divide by 6 (equal angles in regular hexagon) | 1 |
| | • Each interior angle = 120° | 1 |
| | Angles and constructions | |