Test answers - Angles, circles and 3D shapes

Year: Year 6 · Duration: 40 minutes · /20

Answer to Question 1 (3 marks)

a. Angles in a triangle add up to 180°: 65 + 48 = 113 and 180 − 113 = **67°**. (1 mark)
b. Angles on a straight line add up to 180°: $x = 180 - 112 =$ **68°**. (1 mark)
c. Angles at a point add up to 360°: 150 + 95 = 245 and $y = 360 - 245 =$ **115°**. (1 mark)

Answer to Question 2 (4 marks)

a. Vertically opposite angles are equal, so $b = 72^{\circ}$. a lies on a straight line with 72°: $a = 180 - 72 =$ **108°**, and c is opposite a, so $c =$ **108°**. (2 marks)
b. A quadrilateral's angles total 360°: 88 + 102 + 95 = 285 and 360 − 285 = **75°**. (1 mark)
c. Opposite angles of a parallelogram are equal and neighbouring ones add to 180°. The angles are **110°, 70° and 110°**. (1 mark)

Answer to Question 3 (4 marks)

a. The diameter is twice the radius: 2 × 8.5 = **17 cm**. (1 mark)
b. The radius is half the diameter: 13 ÷ 2 = **6.5 cm**. (1 mark)
c. 12 cm wide is the diameter, and compasses are opened to the radius: 12 ÷ 2 = **6 cm**. (1 mark)
d. The table is 1.2 m across at its widest and the cloth is 1.5 m wide, so **yes**: 0.15 m of cloth hangs over on each side. (1 mark)

Answer to Question 4 (4 marks)

a. A cube has 6 square faces, 12 edges (4 top, 4 bottom, 4 upright) and 8 vertices: **6, 12 and 8**. (1 mark)
b. A square base and 4 triangles: **5 faces**; 4 base edges and 4 sloping edges: **8 edges**. (1 mark)
c. Unrolling the curved surface gives a rectangle, and the ends are circles: **one rectangle and two circles**. (1 mark)
d. 6 + 5 − edges = 2, so edges = 11 − 2 = **9**. This shape is a triangular prism. (1 mark)

Answer to Question 5 (5 marks)

a. The two base angles are equal and share 180 − 40 = 140°: 140 ÷ 2 = **70°** each. (1 mark)
b. Radius = half the diameter: 90 ÷ 2 = **45 cm**. (1 mark)
c. The angles at the centre make 360°, shared by 6 equal slices: **60°** each. (1 mark)
d. $x + 2x + 3x = 6x = 180$, so $x = 30$. The angles are **30°, 60° and 90°**: a right-angled triangle. (2 marks)