



11+ Maths: Geometry and Measures

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Diagrams are not drawn to scale. Show working. Include units. You may not use a calculator.

Suggested time: 25 minutes · **Questions:** 16

1. A square has side 9 cm. Find its perimeter and its area. [1]
2. A rectangle is 15 cm by 4 cm. A 3 cm square is cut from one corner. What area remains? [1]
3. The angles of a triangle are 52° , 61° and x . Find x . [1]
4. A straight line is split into angles $3y$ and 75° . Find y . [1]
5. Convert 2.4 km into metres. [1]
6. Convert 3500 g into kilograms. [1]
7. A cube has edge 5 cm. What is its volume? [1]
8. Point A is at (2, 3). It is translated 4 right and 1 down. What are the new coordinates? [1]
9. How many faces, edges and vertices does a triangular prism have? [1]
10. The area of a triangle is 24 cm^2 and its base is 8 cm. Find the perpendicular height. [1]
11. A clock shows 3:20. What is the smaller angle between the hour and minute hands? [1]
12. A regular hexagon has one interior angle of 120° . What is the sum of all interior angles? [1]
13. A shape is made from two identical rectangles 10 cm by 3 cm joined along the 3 cm side to make a longer rectangle. Find the new perimeter. [1]
14. Convert 2 hours 18 minutes into minutes. [1]
15. A circle has radius 7 cm. Using $\pi = 22/7$, find the circumference. [1]
16. On a coordinate grid, the points (1, 2), (1, 6) and (5, 2) are three corners of a rectangle. What is the fourth corner? [1]

Answers and short explanations

Check your work only after you have finished. Equivalent wording is accepted where the meaning is the same.

1. **Answer:** Perimeter 36 cm; area 81 cm²
Why: Perimeter = $4 \times 9 = 36$ cm. Area = $9 \times 9 = 81$ cm².
2. **Answer:** 51 cm²
Why: Rectangle area 60 cm². Square 9 cm². Remaining 51 cm².
3. **Answer:** 67°
Why: Angles in a triangle total 180°. $52 + 61 = 113$. $180 - 113 = 67$.
4. **Answer:** 35°
Why: Angles on a straight line total 180°. $3y + 75 = 180$, so $3y = 105$ and $y = 35$.
5. **Answer:** 2400 m
Why: 1 km = 1000 m, so $2.4 \times 1000 = 2400$ m.
6. **Answer:** 3.5 kg
Why: 1000 g = 1 kg, so $3500 \div 1000 = 3.5$ kg.
7. **Answer:** 125 cm³
Why: Volume of a cube = $5 \times 5 \times 5 = 125$ cm³.
8. **Answer:** (6, 2)
Why: x: $2 + 4 = 6$. y: $3 - 1 = 2$.
9. **Answer:** 5 faces, 9 edges, 6 vertices
Why: Two triangular ends and three rectangles: 5 faces. Edges 9, vertices 6.
10. **Answer:** 6 cm
Why: Area = $\frac{1}{2} \times \text{base} \times \text{height}$. $24 = \frac{1}{2} \times 8 \times h$ so $24 = 4h$ and $h = 6$.
11. **Answer:** 20°
Why: Minute hand at 4 (120° from 12). Hour hand at 3 plus $20/60$ of 30° = 100°. Difference 20°.
12. **Answer:** 720°
Why: $6 \times 120 = 720^\circ$. (Or $(6 - 2) \times 180 = 720$.)
13. **Answer:** 46 cm
Why: New rectangle is 20 cm by 3 cm. Perimeter = $2 \times (20 + 3) = 46$ cm.
14. **Answer:** 138 minutes
Why: $2 \times 60 = 120$, plus 18 = 138 minutes.
15. **Answer:** 44 cm
Why: $C = 2\pi r = 2 \times 22/7 \times 7 = 44$ cm.
16. **Answer:** (5, 6)
Why: Opposite corner shares $x = 5$ with (5, 2) and $y = 6$ with (1, 6).