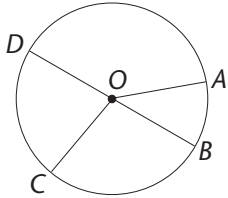


Pages 50–51 Bearings

1 N 000° or 360°, NE 045°, E 090°, SE 135°, S 180°, SW 225°, W 270°, NW 315°

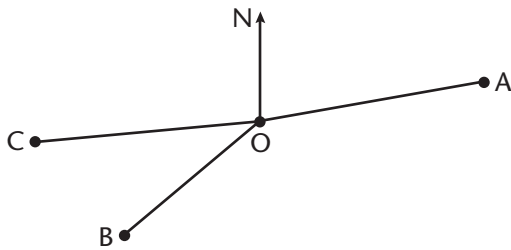
2



3 $a = 060^\circ$ $b = 120^\circ$ $c = 225^\circ$

4 A is 9 km at 080°, B is 7 km at 230°, C is 10 km at 300°

5 Shown half scale.



Pages 52–53 Angle facts

1 70°

2 98°

3 87°

4 103°

5 **a** 70° **b** 125°

6 Missing angle in triangle = $180 - (x + y) = 180 - z$

7 **a** Trapezium **b** 45°

8 168°

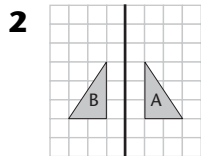
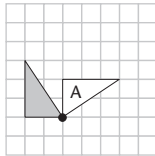
9 **a** 108° **b** 36°

Pages 54–55 Angles in parallel lines and polygons

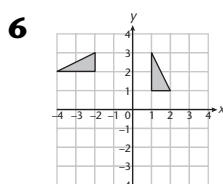
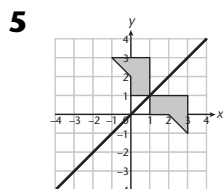
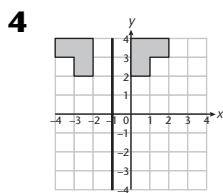
- 1 $a = 50^\circ$ $b = 130^\circ$ $c = 50^\circ$
- 2 $d = 72^\circ$ because alternate
- 3 $e = 55^\circ$ because corresponding
- 4 $f = 120^\circ$ because allied
- 5 $g = 50^\circ$ because opposite, $h = 130^\circ$ because allied
- 6 540°
- 7 Each interior angle is 120° and Each exterior angle is 60° .
- 8 $x = 72^\circ$ $y = 108^\circ$ $z = 72^\circ$
- 9 Angles at any corner are $90^\circ = 360^\circ - 135^\circ - 135^\circ$ and all sides are equal.

Pages 56–57 Reflections and rotations

- 1 a 90° b



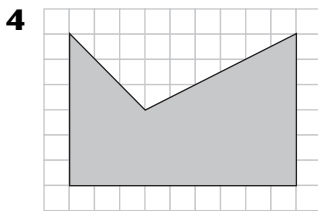
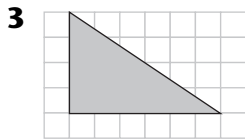
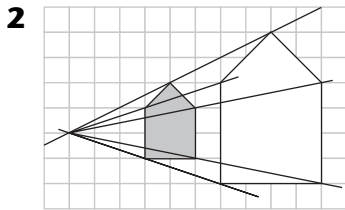
- 3 a Rotation (1 mark) of 180° (1 mark) about (0, 2) (1 mark)
 b Reflection (1 mark) in the x -axis (1 mark)



- 7 a** Reflection (1 mark) in $x = 2$ (1 mark) **b** Reflection (1 mark) in $y = -x$ (1 mark)
c Rotation (1 mark) clockwise through 90° (1 mark) about $(0, -1)$ (1 mark)

Pages 58–59 Enlargements

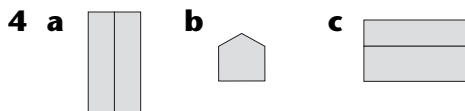
- 1 a** 2 **b** $2\frac{1}{2}$



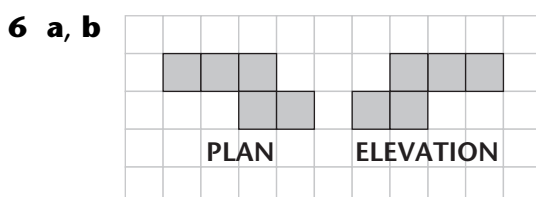
- 5** $A'(2, 2)$, $B'(2, 8)$, $C'(6, 2)$
6 $A(2, 1)$, $B(1, 2)$, $C(2, 2)$
7 a B **b** A **c** C

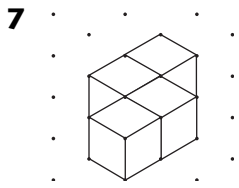
Pages 60–61 3-D shapes

- 1** Triangular prism
2 a, b and c
3 Square-based pyramid



- 5 a** 3 **b** Infinite number **c** 7





(1 mark for any isometric drawing with 4 cubes)

- 8 a ii $2\pi r^2 + 2\pi r h$ b i 1130 cm^3 (1 mark for $\pi r^2 h$) ii 603 cm^2 (1 mark for 226 or 377)
 9 432 cm^2 (1 mark for 216)

Pages 62–63 Perimeter and area

- 1 a Perimeter = 12 cm b Area = 6 cm^2 (1 mark for both units)
 2 a Perimeter = 36 cm b Area = 60 cm^2 (1 mark for both units)
 3 A 6 cm^2 , B 5 cm^2 , C $4\frac{1}{2} \text{ cm}^2$, D 6 cm^2
 4 $7\frac{1}{2} \text{ cm}^2$ (1 mark for units)
 5 21 cm^2 (1 mark for units)
 6 a $x = 5 \text{ cm}$ b $y = 6.25 \text{ cm}$
 7 48 cm^2 (1 mark for 36 cm^2 and 12 cm^2)

Pages 64–65 Circumference and area of a circle

- 1 15.7 cm
 2 25.1 m
 3 8 cm
 4 24.6 cm (1 mark for units)
 5 25.7 cm
 6 28.3 cm^2
 7 19.6 cm^2 (1 mark for units)
 8 $81\pi \text{ cm}^2$
 9 50.3 cm^2
 10 21.5 cm^2

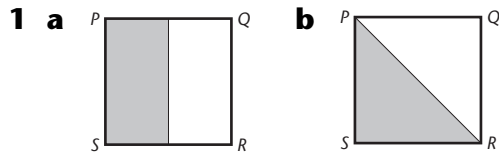
Pages 66–67 Volume

- 1** a 15 cm^3 b 46 cm^2
- 2** 2 cm
- 3** 210 cm^2 (1 mark for units)
- 4** 4 cm
- 5** 8 cm
- 6** 6 m^3
- 7** $D = 180 \text{ cm}^3$, $C = 240 \text{ cm}^3$, $A = 288 \text{ cm}^3$, $B = 625 \text{ cm}^3$
- 8** 800 l (1 mark for $800\,000 \text{ cm}^3$ or 0.8 m^3)
- 9** 4 cm

Pages 68–69 Constructions

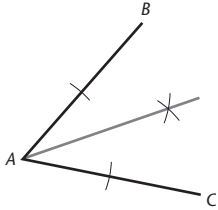
- 1** (1 mark for arcs, 1 for accuracy)
- 2** (1 mark for arcs, 1 for accuracy)
- 3** (1 mark for arcs, 1 for accuracy)
- 4** (1 mark for 2 correct sides, 1 mark for all correct)
- 5** (1 mark for 1 correct side and 1 angle, 1 mark for all correct)
- 6** (1 mark for 1 correct side and 1 angle, 1 mark for all correct)

Pages 70–71 Loci

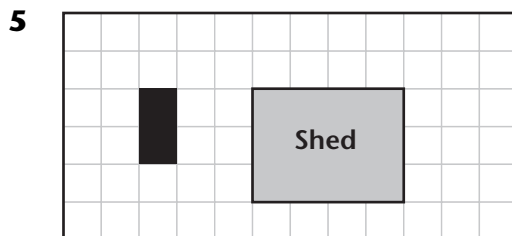
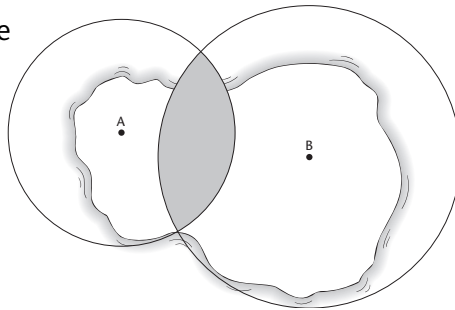


2 i b ii c iii a iv d

3 (1 mark for arcs)



4 a No b Shown half scale



Pages 72–73 Similarity

1 a A and D as all sides the same **b** A or D and C sides in same ratio

2 a 2 b 30° c 8 cm d 5 cm

3 a 2.5 b 50° c 3 cm d 6.25 cm

4 a All angles the same **b 3 cm c 4.5 cm**

5 a dimensions not in same ratio **b 6.67 cm**

Pages 74–75 Pythagoras' theorem

- 1** a 25 cm^2 b 7.07 cm c 39.3 cm^2
2 12.2 cm (1 mark for $\sqrt{149}$)
3 10.4 cm (1 mark for $\sqrt{108}$)
4 86.1 km (1 mark for 36.1)
5 10.2 km (1 mark for $\sqrt{104.48}$)
6 Yes, as $8^2 + 1.8^2 = 8.2^2$
7 14.1 cm (1 mark for $\sqrt{200}$)

Pages 76–77 Trigonometry

- 1** 5.74 cm (1 mark for $10 \times \sin 35$)
2 28.6° (1 mark for $\tan^{-1}(6 \div 11)$)
3 15.9 cm (1 mark for $12 \div \cos 41$)
4 30° (1 mark for $\sin^{-1}(6 \div 12)$)
5 236° (1 mark for $\tan^{-1}(30 \div 20)$ or 56°)
6 120.6° (1 mark for $\tan^{-1}(5.2 \div 8.8)$ or 30.6°)
7 a 7.42 cm (1 mark for $\sqrt{55}$) b 68° (1 mark for $\cos^{-1}(3 \div 8)$)
c 22.2 cm^2 (or 22.3 cm^2 from rounded value for height) (1 mark for $\frac{1}{2} \times 6 \times h$)

Pages 78–79 Sectors and circle theorems

- 1** 2 units (1 mark for $2\pi r = \pi r^2$)
2 a 19.5 cm (1 mark for 7.5) b 22.6 cm^2 (1 mark for $\pi \times 6^2 \div 5$)
3 a i $\frac{1}{4}$ ii $\frac{2}{9}$ b A is 34.2 cm^2 , B is 28.3 cm^2 c A is 23.8 cm , B is 21.4 cm
4 a B is 1570.8 cm^2 , A is 1295.9 cm^2 b B is 4712.4 cm^3 , A is 3534.3 cm^3
5 $a = 18^\circ$, $b = 90^\circ$, $c = 32^\circ$, $d = 52^\circ$
6 $a = 82^\circ$, $b = 25^\circ$, $c = 140^\circ$, $d = 142^\circ$