

Circle and area answers

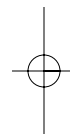
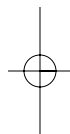
Page 31

1 a 452.4

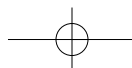
b 62.8

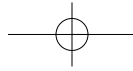
2 50π

3 152 cm^2 (1 mark for $\frac{1}{2} \times (22 + 16) \times 8$)



Remember: Check which grade you are working at.





Sectors and prisms answers

Page 32

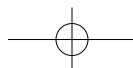
1 a 20π (1 mark for $100\pi \div 5$)

b $16\pi + 20$ (1 mark for $20\pi \div 5 \times 4$)

2 a 14 cm^2

b 168 cm^3 (1 mark for 14×12)

Remember: Check which grade you are working at.



Cylinders and pyramids answers

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1 a 160π (1 mark for $\pi \times 4^2 \times 10$)

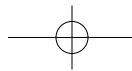
b 112π (1 mark for $2\pi \times 4^2 + 2 \times \pi \times 4 \times 10$)

2 Volume whole pyramid = 320 (1 mark)

Volume cut off pyramid = 5 (1 mark)

Volume frustum = 315 (1 mark)

Remember: Check which grade you are working at.

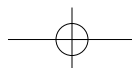


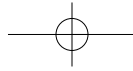
Cones and spheres answers

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- 1** Volume 6 cm cone = 1.5707 cm^3 (1 mark)
Volume 3 cm cone = 0.7854 cm^3 (1 mark)
Total volume = 2.356 cm^3 (1 mark)
Mass = 3.5 g (1 mark)
- 2** Volume cylinder = 678.6 cm^3 (1 mark)
Volume hemisphere = 261.8 cm^3 (1 mark)
Volume ashtray = 416.8 cm^3 (1 mark)

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Pythagoras' theorem answers

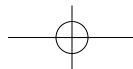
Page 35

- 1 12.8 (1 mark for $\sqrt{164}$)
2 10.2 (1 mark for $\sqrt{104}$)
3 4.5 (1 mark for $\sqrt{20.41}$)

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- 1 40.2 (1 mark for $\sqrt{131.75}$)
2 a 14.14 cm (1 mark for $\sqrt{200}$)
b 13.2 cm (1 mark for $\sqrt{175}$)
c 14.14 cm (1 mark for $\sqrt{200}$)

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Using Pythagoras and trigonometry answers

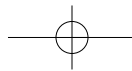
Page 37

- 1 a** 0.5449883506
b 0.54 or 0.545
- 2 a** 8.36 cm *(1 mark for $13 \times \sin 40$)*
b 32.2° *(1 mark for $\sin^{-1}(8 \div 15)$)*
- 3 a** 22.4 cm *(1 mark for $15 \div \cos 48$)*
b 63.2° *(1 mark for $\cos^{-1}(9 \div 20)$)*
- 4 a** 3.64 cm *(1 mark for $10 \times \tan 20$)*
b 31.0° *(1 mark for $\tan^{-1}(3 \div 5)$)*

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- 1** 44.4° *(1 mark for $\cos^{-1}(20 \div 28)$)*
- 2** 25.7 cm *(1 mark for $12 \div \tan 25$)*
- 3** 11.8 cm *(1 mark for $20 \times \sin 36$)*
- 4** 53.1° *(1 mark for $\sin^{-1}(40 \div 50)$)*

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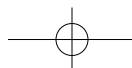


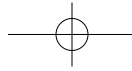
Geometry answers

Page 39

- 1** 40° (1 mark for $BCD = 100^\circ$; 1 mark for $DCE = 80^\circ$; 1 mark for $CDE = 60^\circ$)
- 2 a** Pentagon can be split into 3 triangles (1 mark)
 $3 \times 180 = 540$ (1 mark)
- b** 10 (1 mark for $360 \div 36$)
- c** Exterior angle = 20 (1 mark); $360 \div 20 = 18$ (1 mark)

Remember: Check which grade you are working at.





Circle theorems answers

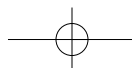
Page 40

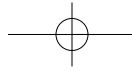
- 1 a** 27° (1 mark) $ACB = 90^\circ$; angles in triangle (1 mark)
b $OC = OB$, so isosceles triangle
- 2 a** 102° (1 mark); opposite angles in a cyclic quad (1 mark)
b 156° (1 mark); angle at centre twice angle at circumference (1 mark)

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- 1 a** 33° (1 mark) $AQB = 90^\circ$; angles in triangle (1 mark)
b 33° (1 mark); alternate segment (1 mark)
- 2 a** $ACB = x$; isosceles (1 mark)
 $BAP = CAT = x$ Alternate segment (1 mark)
 BAC is symmetric so AM must be at right angles to PT (1 mark)

Remember: Check which grade you are working at.





Transformation geometry answers

Page 42

1 R and S

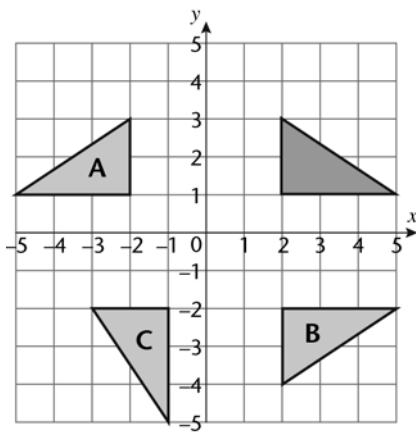
2 a Translation (1 mark) of $(-6, -3)$ (1 mark)

b Triangle at $(3, 6), (3, 9), (5, 6)$

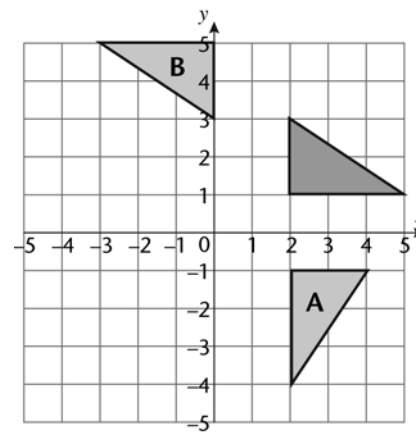
c $(-7, 5)$

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1



2 a, b



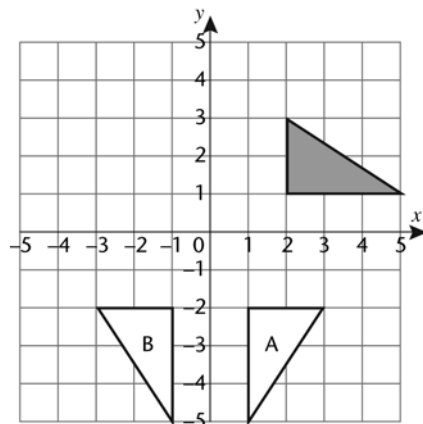
c 90° (1 mark); clockwise (1 mark);
about $(4, 3)$ (1 mark)

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1 a Enlargement scale factor $\frac{1}{2}$ (1 mark); centre $(1, 8)$ (1 mark)

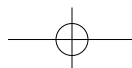
b Triangle at $(2, 1), (3, 1), (2, 2\frac{1}{2})$

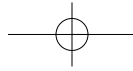
2 a, b



c Reflection in $y = -x$

Remember: Check which grade you are working at.



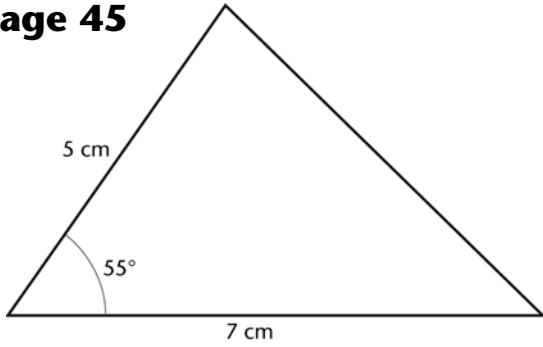


SHAPE, SPACE AND MEASURES

Constructions answers

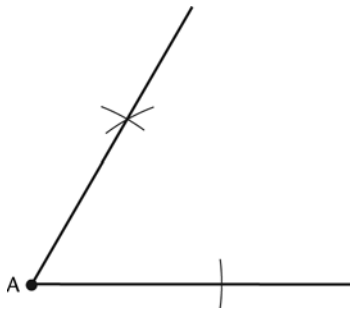
Page 45

1

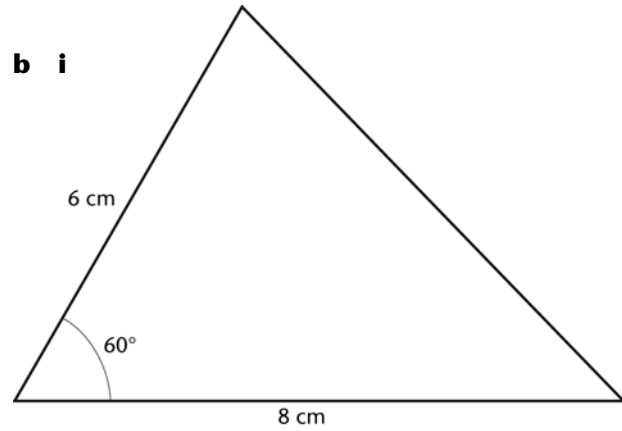


(1 mark for each length ± 1 mm and 1 mark for angle $\pm 1^\circ$)

2 a



b i

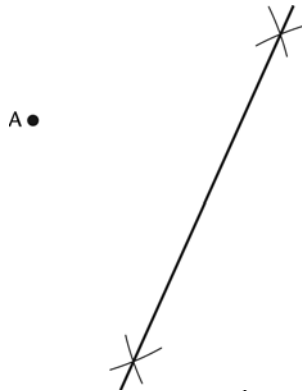


(1 mark for each length ± 1 mm and 1 mark for angle $\pm 1^\circ$)

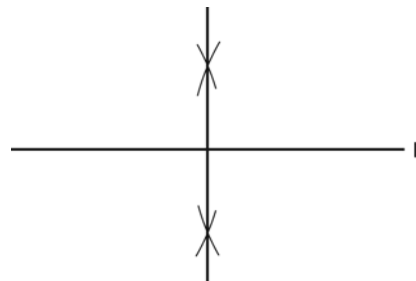
ii 7.2 cm

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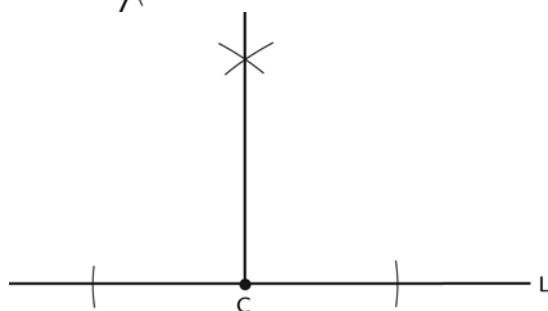
1 a



2 a

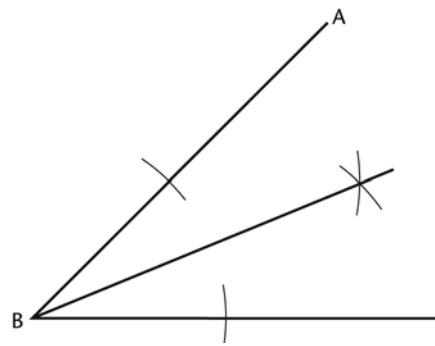


b



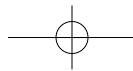
(Deduct a mark if arcs not shown)

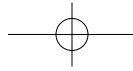
b



(Deduct a mark if arcs not shown)

Remember: Check which grade you are working at.

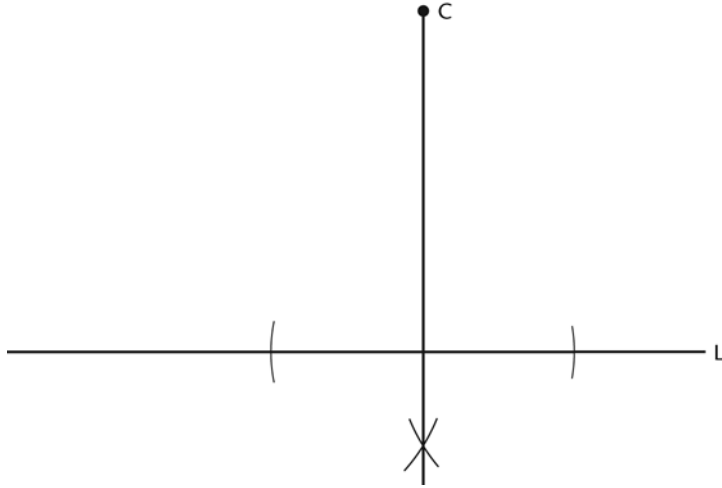




Constructions and loci answers

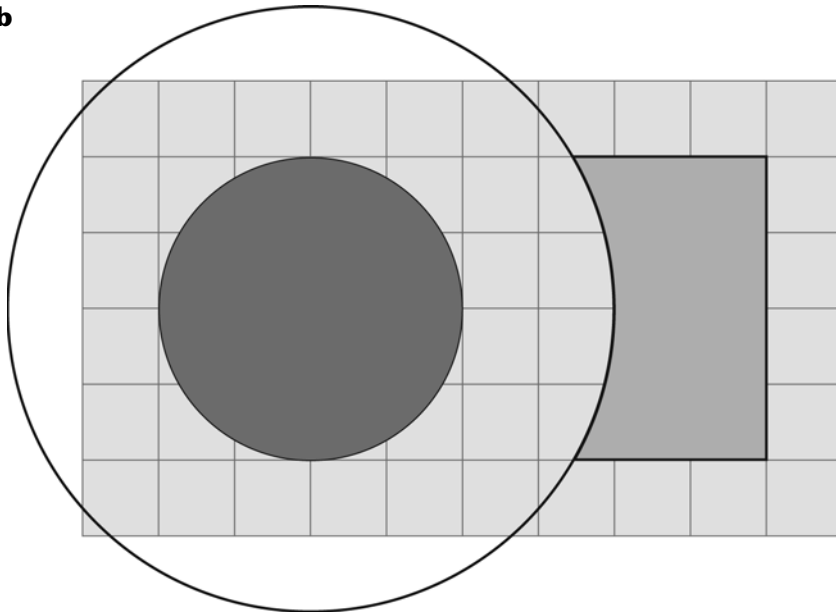
Page 47

1

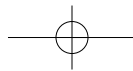


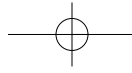
(Deduct a mark if arcs not shown)

2 a, b



Remember: Check which grade you are working at.





Similarity answers

Page 48

1 a 8.4 cm

b 8.8 cm

2 9 m by 6 m (1 mark for $1500 \div 20$ or scale factor of 75)

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1 a $2.7 \text{ m} \times 1.35 \text{ m}$

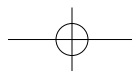
b 29.25 m^2 (1 mark for $\sqrt{0.75^2}$)

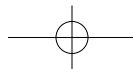
c 31.6 cm^3 (1 mark for $\sqrt{0.75^3}$)

2 a 28.5 cm (1 mark for $\sqrt[3]{2.5}$)

b 38 cm^2 (1 mark for $70 \div (\sqrt[3]{2.5})^2$)

Remember: Check which grade you are working at.





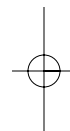
Dimensional analysis answers

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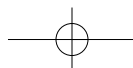
1 Area; volume; length

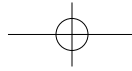
2 a Area; perimeter; volume

b Inconsistent; area plus volume



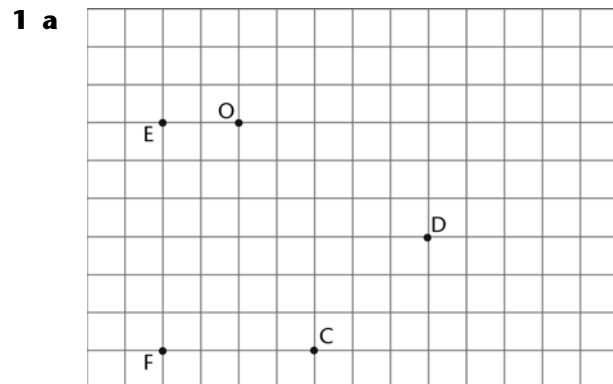
Remember: Check which grade you are working at.





Vectors answers

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b $2\frac{1}{2}\mathbf{a} + \mathbf{b}$

c $5\mathbf{a} - 7\mathbf{b}$

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1 a i $-\frac{1}{2}\mathbf{a} + \frac{1}{2}\mathbf{c}$

ii $\mathbf{b} - \mathbf{a}$

iii $\mathbf{c} - \mathbf{b}$

iv $-\frac{1}{2}\mathbf{a} + \frac{1}{2}\mathbf{c}$

b Parallelogram as PS and QR are equal so parallel and same length

Remember: Check which grade you are working at.

