4.2 Geometry: Area, Perimeter and Volume: Test Pack

Calculator allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A rectangular school playing field is being measured for a sports day.

(a) State the correct unit for the area of the field. **(1)**

- ☐ A) m
- ☐ B) m^2
- ☐ C) m^3
- ☐ D) cm

(b) The field is 9 m long and 3.5 m wide. Calculate the perimeter of the field. **(2)**

.....

2 A rectangular whiteboard measures 1.6 m by 0.9 m.

(a) Calculate the area of the whiteboard. **(2)**

.....

(b) A different rectangular tile has an area of 18 cm^2 and a length of 6 cm. Work out the width of the tile. **(2)**

.....

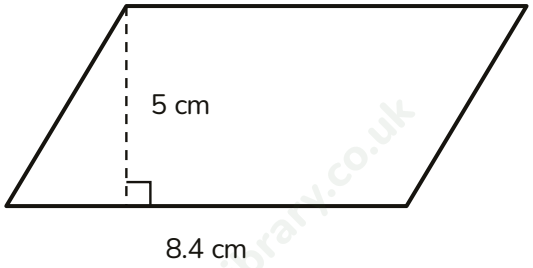
3 State the correct unit for the volume of a solid measured in centimetres.

(1)

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4 A parallelogram-shaped tile has a base of 8.4 cm and a perpendicular height of 5 cm. Calculate the area of the tile.

Diagram NOT accurately drawn



(2)

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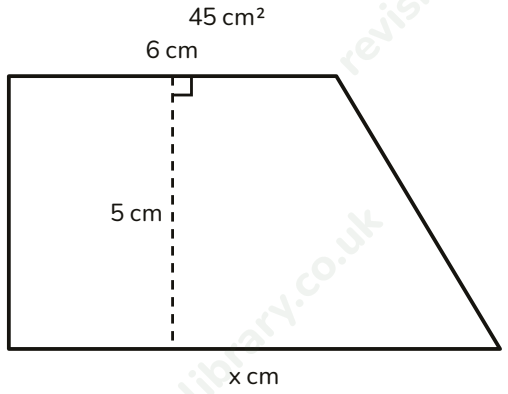
5 The area of a rectangle is 143 cm² and its length is 13 cm. Work out its width and its perimeter.

(3)

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6 A trapezium has area 45 cm². Its parallel sides are 6 cm and x cm, and the distance between them is 5 cm. Work out the value of x.

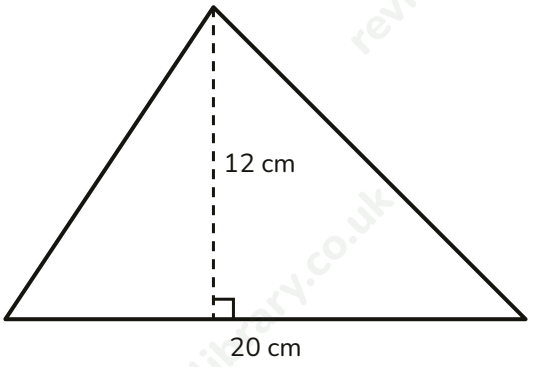
Diagram NOT accurately drawn



(4)

7 A triangle has a base of 20 cm and a perpendicular height of 12 cm. Work out its area.

Diagram NOT accurately drawn



(2)

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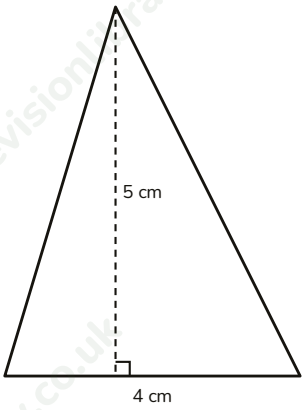
8 The area of a rectangle is 108 cm² and its length is 12 cm. Work out its width and its perimeter.

(3)

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9 A triangle has a base of 4 cm and a perpendicular height of 5 cm. Work out its area.

Diagram NOT accurately drawn

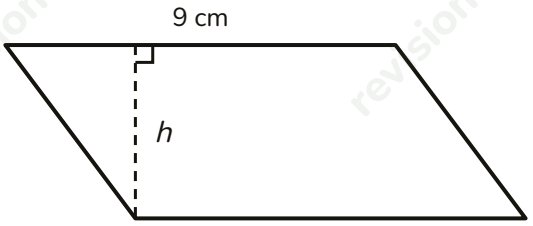


(2)

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10 A parallelogram has area 36 cm² and base 9 cm. Work out the perpendicular height.

Diagram NOT accurately drawn



36 cm²

(2)

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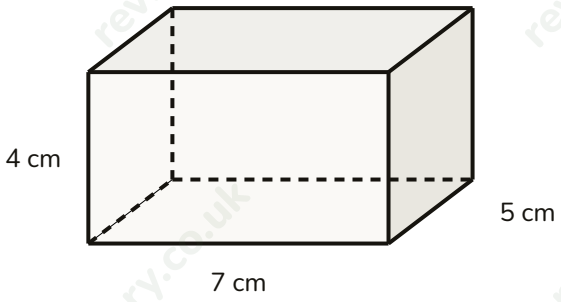
11 Unit conversions.

(a) Convert 3.2 m^2 to cm^2. **(2)**

(b) A small tile has an area of 250 mm^2. Convert this to cm^2. **(2)**

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12 A cuboid has length 7 cm, width 5 cm and height 4 cm. Calculate the total surface area of the cuboid.

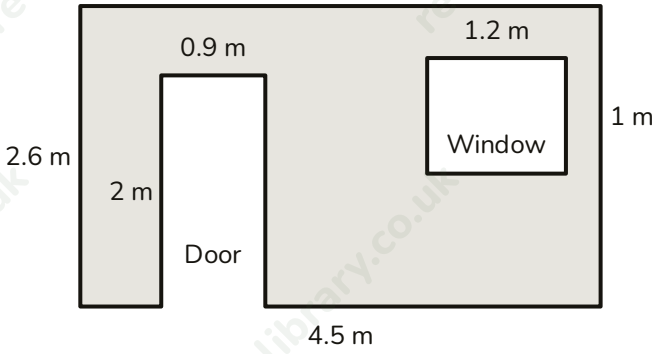


(3)

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13 A wall measures 4.5 m long and 2.6 m high. It contains one rectangular window measuring 1.2 m by 1 m and one rectangular door measuring 0.9 m by 2 m. One litre of paint covers 12 m². Paint is sold only in 2.5-litre tins.

Diagram NOT accurately drawn



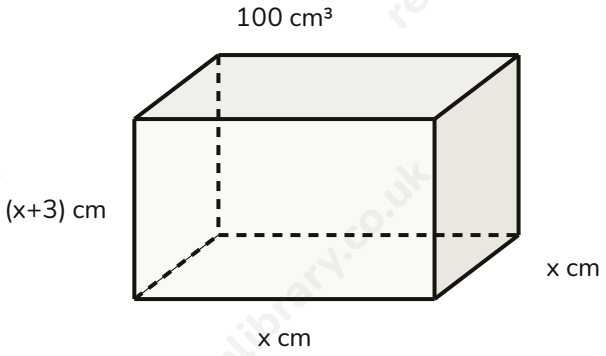
(a) Calculate the area of the wall that needs to be painted (the wall area minus the window and the door). **(2)**

(b) Calculate the minimum number of 2.5-litre tins of paint needed. Show your working. **(2)**

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14 A cuboid has a square base of side x cm and height (x+3) cm. Its volume is 100 cm³. By trial and improvement, find the value of x correct to 1 decimal place. Show at least two trials.

Diagram NOT accurately drawn

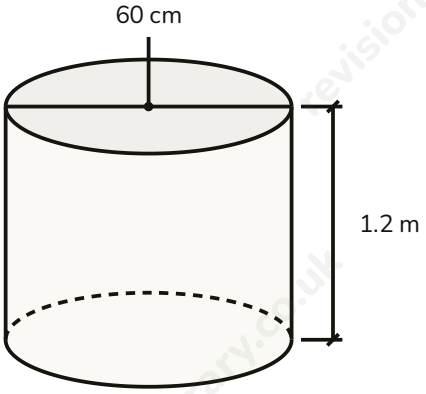


(3)

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15 A cylindrical water butt has a diameter of 60 cm and a height of 1.2 m.

Diagram NOT accurately drawn



(a) Calculate the volume of the water butt in m^3, giving your answer to 3 significant figures. **(3)**

.....

(b) Convert your answer to part (a) into litres, giving your answer to 3 significant figures. **(2)**

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Mark scheme · 4.2 Geometry: Area, Perimeter and Volume: Test Pack

Question 1

(a) B) m^2 selected	B1
(a) Answer: **B) m^2**	
(b) 2*(9+3.5) oe, or 9+9+3.5+3.5	M1
(b) 25 m cao	A1
(b) Answer: **25 m**	

Question 2

(a) 1.6*0.9 oe	M1
(a) 1.44 m² cao	A1
(a) Answer: **1.44 m^2**	
(b) 18/6 oe	M1
(b) 3 cm cao	A1
(b) Answer: **3 cm**	

Question 3

cm^3 cao	B1
Answer: **cm^3**	

Question 4

8.4*5 oe	M1
42 cm² cao	A1
Answer: **42 cm^2**	

Question 5

143 ÷ 13	M1
width = 11 cm	A1
perimeter = 48 cm	A1
Answer: **width = 11 cm, perimeter = 48 cm**	

Question 6

45 = 1/2 (x + 6) x 5	M1
x + 6 = 18	M1
isolates x	M1
12 cm cao	A1
Answer: **12 cm**	

Question 7

1/2 x 20 x 12 or 20 x 12 ÷ 2	M1
120 cm² cao	A1
Answer: **120 cm^2**	

Question 8

108 ÷ 12	M1
width = 9 cm	A1
perimeter = 42 cm	A1
Answer: **width = 9 cm, perimeter = 42 cm**	

Question 9

1/2 x 4 x 5 or 4 x 5 ÷ 2	M1
10 cm² cao	A1
Answer: **10 cm^2**	

Question 10

36 ÷ 9	M1
4 cm cao	A1
Answer: **4 cm**	

Question 11

(a) 1 m² = 10000 cm² used oe	M1
(a) 32000 cm² cao	A1
(a) Answer: **32000 cm^2**	
(b) 1 cm² = 100 mm² used oe	M1
(b) 2.5 cm² cao	A1
(b) Answer: **2.5 cm^2**	

Question 12

three face areas found: 7*5=35, 7*4=28, 5*4=20	M1
sum = 83 oe	A1
166 cm² cao (83 doubled)	A1
Answer: **166 cm^2**	

Question 13

(a) 4.5*2.6 - (1.2*1) - (0.9*2) oe, complete method	M1
(a) 8.7 m² cao	A1
(a) Answer: **8.7 m^2**	
(b) 8.7/12 (=0.725 litres needed), ft from part (a)	M1
(b) 1 tin cao ft, with reason that 0.725 < 2.5	A1
(b) Answer: **1 tin**	

Question 14

trial e.g. x=3.8 giving 3.8^2*6.8=98.19... (too small)	M1
trial e.g. x=3.9 giving 3.9^2*6.9=104.95... (too big), narrowing between 3.8 and 3.9	M1
x=3.8 cao (1 dp), supported by checking midpoint 3.85 giving 101.53... (too big, confirms root nearer 3.8)	A1
Answer: **x = 3.8 (1 dp)**	

Question 15

(a) radius = 0.3 m used (diameter converted and halved)	M1
(a) π*0.3^2*1.2 oe	M1
(a) awrt 0.339 m³	A1
(a) Answer: **0.339 m^3 (3 sf)**	
(b) 1 m³ = 1000 litres used, ft from (a)	M1
(b) awrt 339 litres cao ft	A1
(b) Answer: **339 litres (3 sf)**	

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