4.12 Volume and Surface Area of Prisms: 1-hour Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

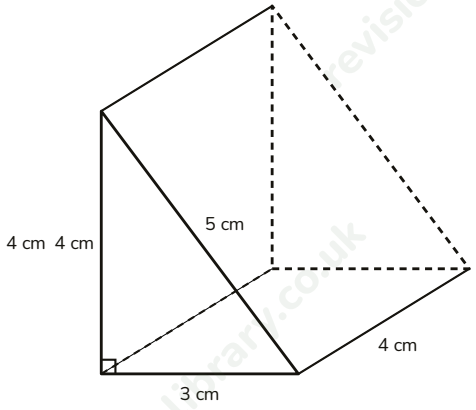
Answer ALL questions. Show all your working.

1 Stretch question. A school needs to fill a model rectangular tank that measures 0.9 m by 0.6 m by 0.4 m. Water is delivered in drums of 25 L. How many full drums are needed to fill the tank? Show your working and give the final number of drums.

(4)

---

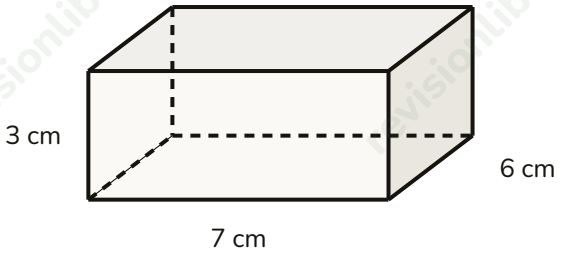
2 A triangular prism has a right-angled triangle as its cross-section. The triangle has sides 3 cm, 4 cm and 5 cm (the longest side is 5 cm). The prism is 4 cm long. Work out the total surface area.



(4)

© Revision Library | revisionlibrary.co.uk

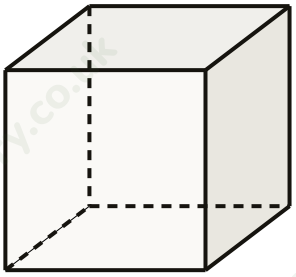
3 A cuboid measures 3 cm by 6 cm by 7 cm. Work out its total surface area.



(3)

---

4 A cube has side length 7 cm. Work out its total surface area.



(2)

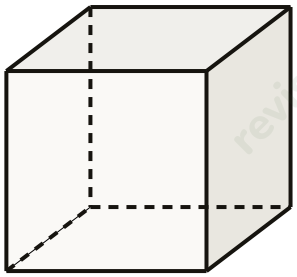
---

5 A tank is 89 cm long and 22 cm wide. Water is poured into it to a depth of 6 cm. How many litres of water are in the tank? (1 litre = 1000 cm^3)

(3)

© Revision Library | revisionlibrary.co.uk

6 A cube has side length 9 cm. Work out its total surface area.

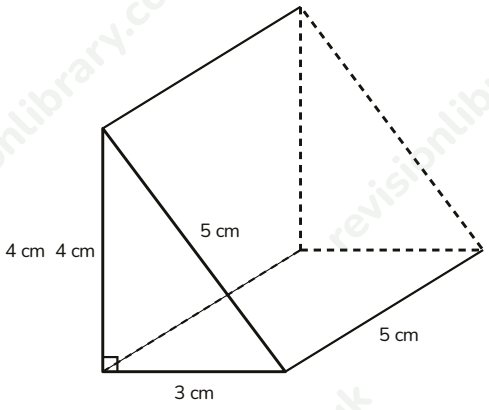


9 cm

(2)

---

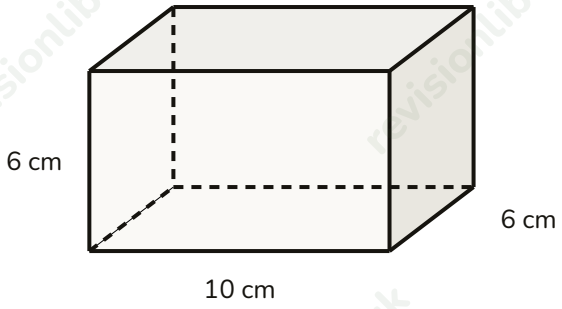
7 A triangular prism has a right-angled triangle as its cross-section. The triangle has sides 3 cm, 4 cm and 5 cm (the longest side is 5 cm). The prism is 5 cm long. Work out the total surface area.



(4)

© Revision Library | revisionlibrary.co.uk

8 A cuboid measures 6 cm by 10 cm by 6 cm. Work out its volume.



(2)

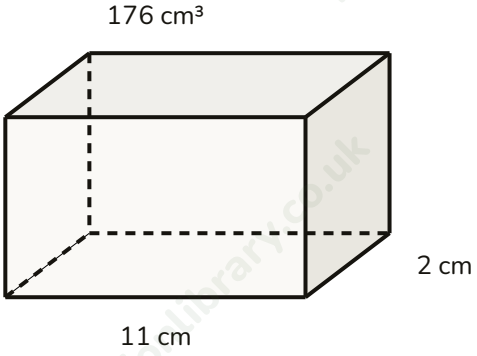
---

9 A tank holds 4500 cm³ of water. How many litres is this? (1 litre = 1000 cm³)

(2)

---

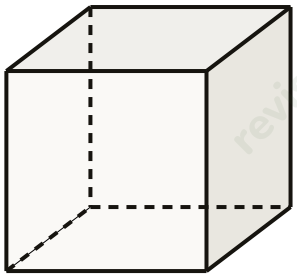
10 A cuboid has volume 176 cm³. Its length is 11 cm and its width is 2 cm. Work out its height.



(3)

© Revision Library | revisionlibrary.co.uk

11 A cube has side length 8 cm. Work out its total surface area.

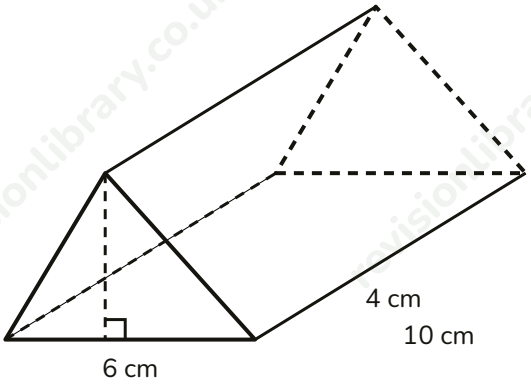


8 cm

(2)

---

12 A triangular prism has a triangular end with base 6 cm and height 4 cm. The prism length is 10 cm. Calculate the volume of the prism in cubic centimetres.



(2)

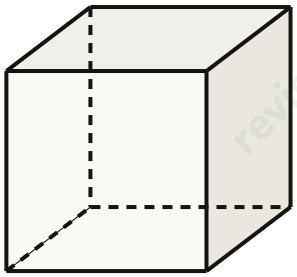
---

13 A tank is 25 cm long and 56 cm wide. Water is poured into it to a depth of 15 cm. How many litres of water are in the tank? (1 litre = 1000 cm^3)

(3)

© Revision Library | revisionlibrary.co.uk

14 A cube has side length 4 cm. Work out its total surface area.

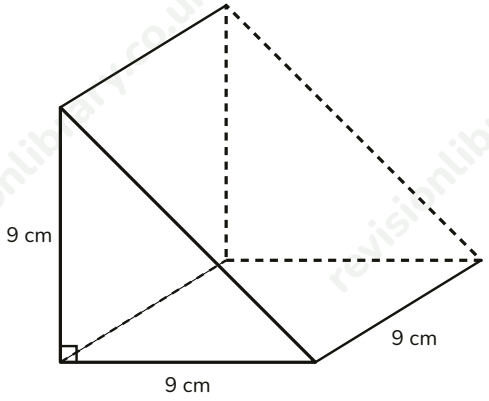


4 cm

(2)

---

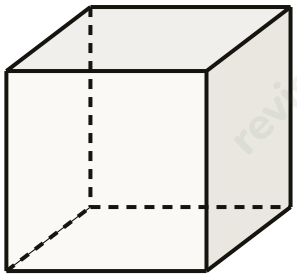
15 A triangular prism has a right-angled triangle for its cross-section, with base 9 cm and height 9 cm. The prism is 9 cm long. Work out its volume.



(3)

© Revision Library | revisionlibrary.co.uk

16 A cube has side length 2 cm. Work out its total surface area.



2 cm

(2)

---

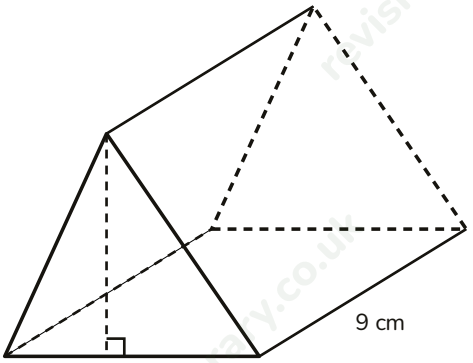
17 Convert 1.7 m² into cm^2.

(2)

© Revision Library | revisionlibrary.co.uk

18 A triangular prism has a triangular cross-section of area 20 cm² and length 9 cm.
Calculate its volume.

Diagram NOT accurately drawn



Cross-section area: 20 cm²

(1)

---

19 Convert 2.5 m³ to litres (1 m³ = 1000 litres).

(1)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 4.12 Volume and Surface Area of Prisms: 1-hour Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

volume tank = 0.9 x 0.6 x 0.4 = 0.216 m³	M1
convert to litres: 0.216 x 1000 = 216 L	M1
divide by 25 L per drum: 216/25 = 8.64 so need 9 drums	M1
9 drums cao	A1

Answer: **9**

Question 2

two triangles: 2 x 1/2 x 3 x 4 = 12	M1
perimeter of triangle x length: 12 x 4	M1
adds the triangles and the rectangles	M1
60 cm² cao	A1

Answer: **60 cm^2**

Question 3

area of at least two different faces found	M1
all three pairs of faces: 2(18) + 2(21) + 2(42)	M1
162 cm² cao	A1

Answer: **162 cm^2**

Question 4

6 x 7^2 or 49 seen	M1
294 cm² cao	A1

Answer: **294 cm^2**

Question 5

89 x 22 x 6	M1
÷ 1000	M1
11.748 litres cao	A1

Answer: **11.748 litres**

Question 6

6 x 9^2 or 81 seen	M1
486 cm² cao	A1

Answer: **486 cm^2**

Question 7

two triangles: 2 x 1/2 x 3 x 4 = 12	M1
perimeter of triangle x length: 12 x 5	M1
adds the triangles and the rectangles	M1
72 cm² cao	A1

Answer: **72 cm^2**

Question 8

6 x 10 x 6	M1
360 cm³ cao	A1

Answer: **360 cm^3**

Question 9

4500 ÷ 1000	M1
4.5 litres cao	A1

Answer: **4.5 litres**

Question 10

11 x 2 = 22	M1
176 ÷ 22	M1
8 cm cao	A1

Answer: **8 cm**

Question 11

6 x 8^2 or 64 seen	M1
384 cm² cao	A1

Answer: **384 cm^2**

Question 12

area of triangle = 1/2 x base x height = 1/2 x 6 x 4 = 12 cm² or equivalent	M1
120 cm³ cao	A1

Answer: **120 cm³**

Question 13

25 x 56 x 15	M1
÷ 1000	M1
21 litres cao	A1

Answer: **21 litres**

Question 14

6 x 4^2 or 16 seen	M1
96 cm² cao	A1

Answer: **96 cm^2**

Question 15

cross-section area 1/2 x 9 x 9	M1
x 9	M1
364.5 cm³ cao	A1

Answer: **364.5 cm^3**

Question 16

6 x 2^2 or 4 seen	M1
24 cm² cao	A1

Answer: **24 cm^2**

Question 17

1 m² = 10 000 cm² used	M1
17000 cm² cao	A1

Answer: **17000 cm^2**

Question 18

180 cao	B1

Answer: **180 cm^3**

Question 19

2500 cao	B1

Answer: **2500 litres**

© Revision Library | revisionlibrary.co.uk