Name:

Exam Style Questions

Volume of a Prism

Corbettmaths

Equipment needed: Pen and Calculator

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings
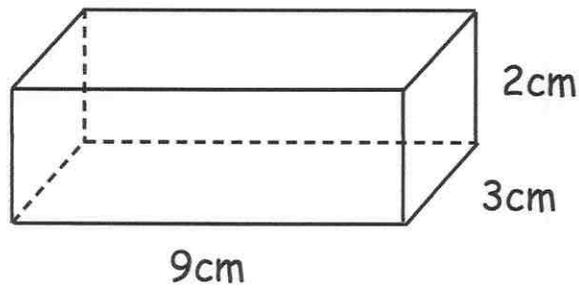
Video Tutorial

www.corbettmaths.com/contents

Video 356

Answers and Video Solutions
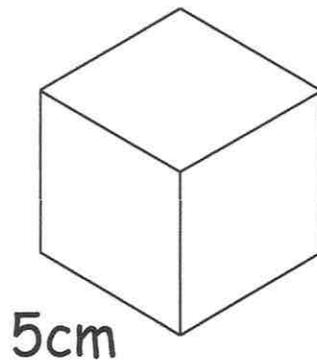
1. Shown below is a cuboid.

2cm
3cm
9cm

Find the volume of the cuboid.
Include units.

$$v = l \times w \times d$$
$$= 9 \times 3 \times 2$$
$$= 54 \, cm^3$$

54 cm³

....
(2)

2. Shown below is a cube.

5cm

Find the volume of the cube.
Include units.

$$v = l \times w \times d$$
$$= 5 \times 5 \times 5$$
$$= 125 \, cm^3$$

125 cm³

....
(2)

3. Shown below is a triangular prism.

$A = \frac{1}{2} \times b \times d$

$= \frac{1}{2}(20)$

$= 10\ cm^2$

4cm

12cm

5cm

Find the volume of the prism.

$V = A \times L$

$= 10 \times 12$

$= 120\ cm^3$

120
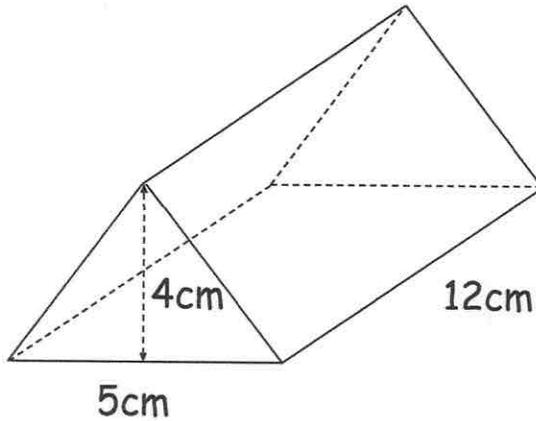
...........................cm³

(3)

4. Shown below is a prism.
The cross-sectional area is 21cm²
The prism has a length of 6cm

21cm²

6cm
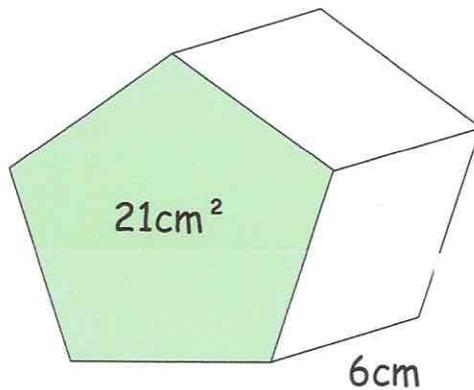
Find the volume of the prism.

$21 \times 6 = 126$

126

...........................cm³

(2)

5. The diagram shows a trapezoid prism.
   The area of the cross-section is 55cm²
   The volume of the prism is 330cm³
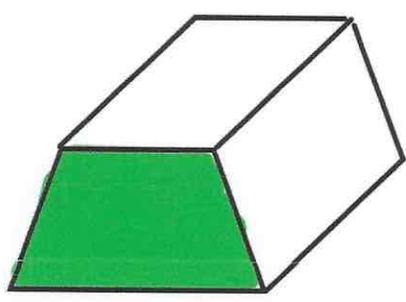
$$55$$
$$110$$
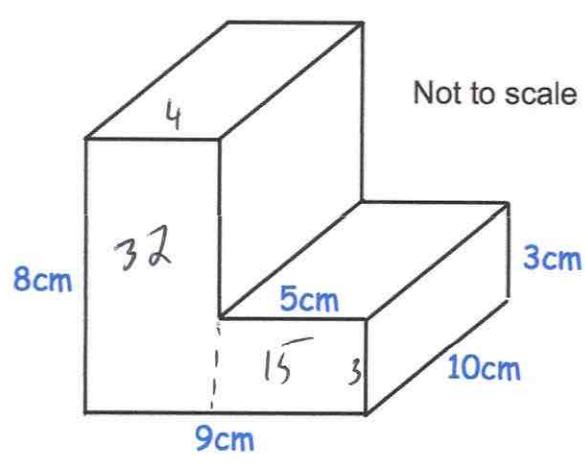$$165$$
$$220$$
$$275$$
$$330$$

Find the length of the prism.

$$330 \div 55 = 6$$

.......................6...........cm

(2)

6. The diagram shows a prism.

Not to scale

4

$$A = 47 cm^2$$

32

8cm

5cm

3cm

15   3

10cm

9cm

Work out the volume of the prism.

$$V = A \times L$$

$$= 47 \times 10$$

$$= 470$$

.......................470...........cm³

(4)

7. Shown below is a prism.

$A = 84m^2$

3m

9m

30

10m

54

6m

4m

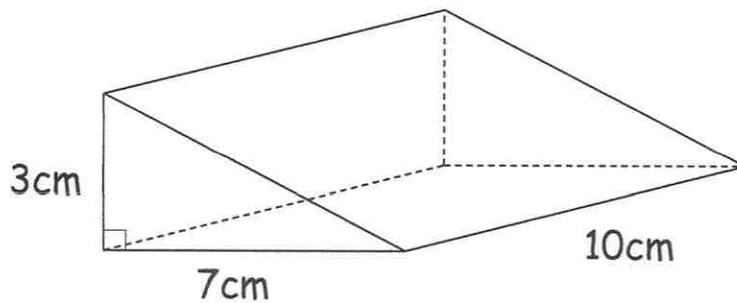Work out the volume of the prism.

$$V = A \times L$$

$$= 84 \times 4$$

$$= 336$$
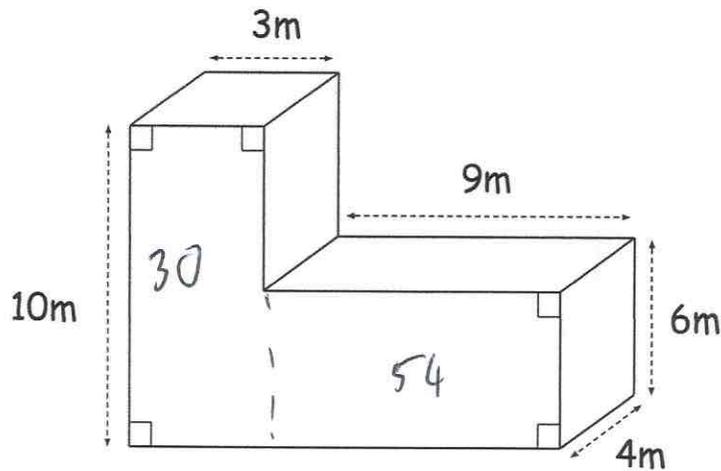
$$\begin{array}{r} 84 \\ \times\ 4 \\ \hline 336 \end{array}$$

___336___ m³

(3)

8. Shown below is a triangular prism.

$A = \frac{1}{2}(21)$

$= 10.5$

3cm

10cm

7cm

Find the volume of the triangular prism.

$$V = 10.5 \times 10$$

$$= 105\ cm^3$$

___105___ cm³

(3)

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9. Shown below is a triangular prism.

$A = \frac{1}{2}(8.5 \times 6.8)$

8.5cm

$= 28.9$

6.8cm

21.5cm
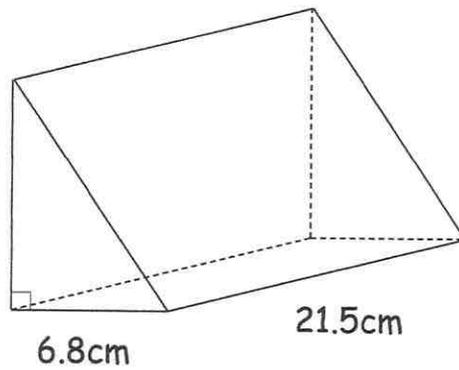
Find the volume of the triangular prism.
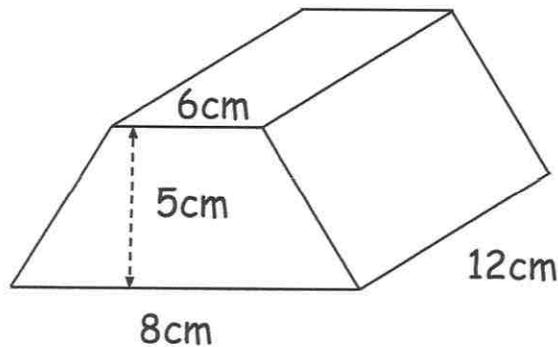
$V = A \times l$

$= 28.9 \times 21.5$

$= 621.35$

621.35

..........................cm³

(3)

10. Shown below is a trapezoid prism.

$A = \frac{1}{2}(6+8) \times 5$

$= 35 cm^2$

6cm

5cm

8cm

12cm

Find the volume of the prism.

$V = 35 \times 12$

$= 420$

420

..........................cm³

(4)

11. Shown below is a prism.
The cross-section is a parallelogram.

9cm

5cm

4cm

14cm
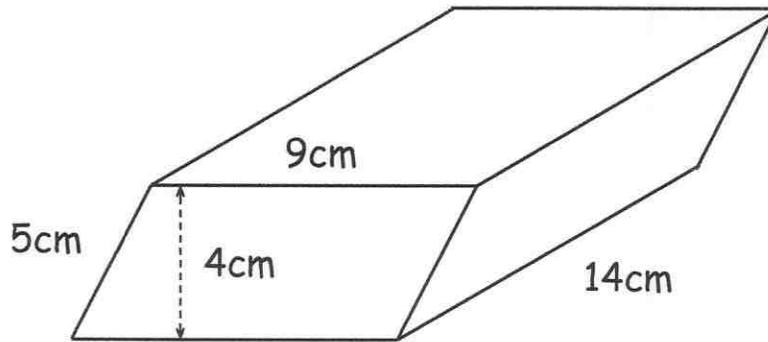
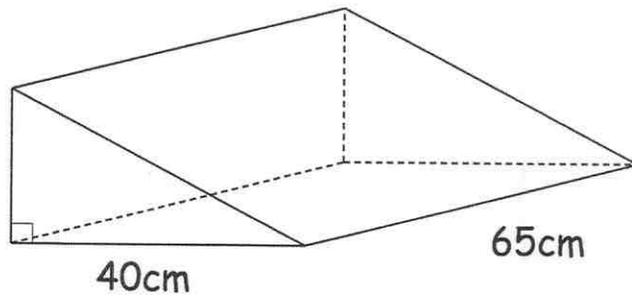Find the volume of the prism.

$A = 4 \times 9$

$= 36 \, cm^2$

$v = 36 \times 14$

$= 504 \, cm^3$

504

.........................cm³

(3)

12. The solid triangular prism shown below is made from metal.

$A = \frac{1}{2}(22 \times 40)$

$= 440 cm^2$ **22cm**

40cm

65cm

$V = 440 \times 65$

$= 28600 cm^3$

The prism is melted down and the metal is used to make solid cubes, each with side length 3cm.
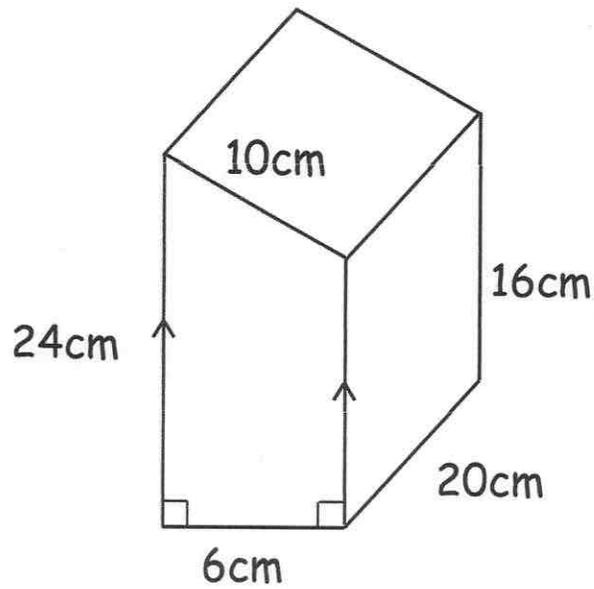
$V = 3 \times 3 \times 3$

$= 27 cm^3$

3cm
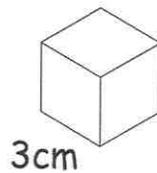
How many cubes can be made?

$28600 \div 27 = 1059.259259$

1059

....

(4)

13. Shown below is a prism.

10cm

16cm

24cm

20cm

6cm

Work out the volume of the prism.

$$A = \frac{1}{2}(a + b) \times h$$
$$= \frac{1}{2}(24 + 16) \times 6$$
$$= 120 \text{ cm}^2$$

$$V = 120 \times 20$$
$$= 2400$$

........2400........cm³

(3)

14. Siobhan has a solid glass paperweight.
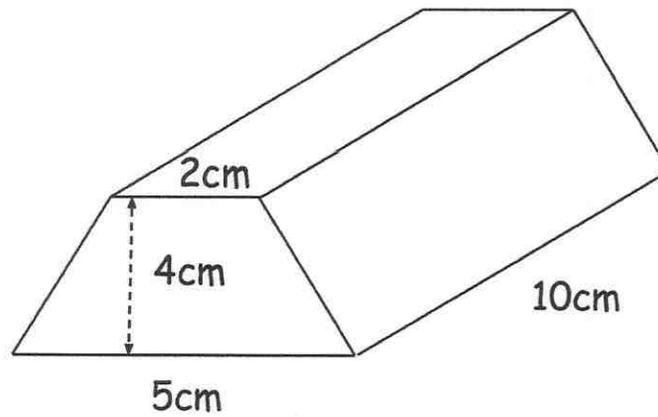
The density of the glass is 2.5g/cm³

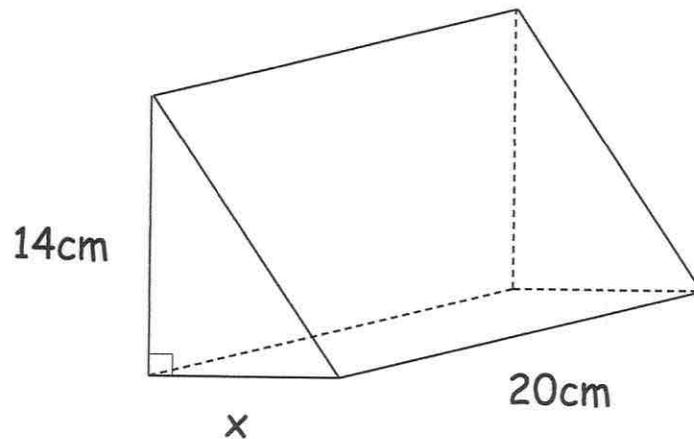Work out the mass of the paperweight.
Include suitable units.

$$A = \frac{1}{2}(2+5) \times 4$$

$$= 14 \, cm^2$$

$$V = 14 \times 10$$

$$= 140 \, cm^3$$

$$M = D \times V$$
$$= 2.5 \times 140$$

$$= 350 \, g$$

....350g.... (4)

15. Shown below is a triangular prism.

14cm

20cm

x

The height of the triangle is 14cm
The length of the prism is 20cm

The volume of the prism is 1232cm³

Work out the length of the base of the triangle.

$$1232 \div 20 = 61.6$$
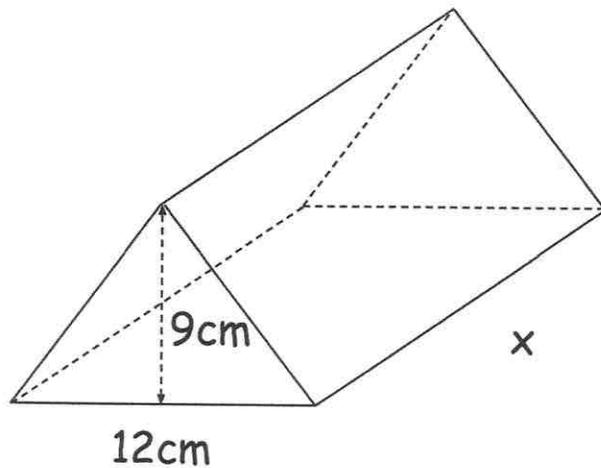
Area of cross-section = 61.6 cm^2

$$\tfrac{1}{2}(x \times 14) = 61.6$$

$$14x = 123.2$$

$$x = 8.8$$

........................8.8........................cm

(3)

16. Shown below is a solid triangular prism.
The prism is made from titanium.

9cm

12cm

x

The mass of the prism is ~~9450g~~ 9.45
The density of the titanium is 4.5g/cm³

$$\frac{1}{2}(12 \times 9) = 54 cm^2$$

Find the length of the prism.

$$v = \frac{m}{d} \qquad \frac{9450}{4.5} = 2100$$

$$v = 2100 cm^3$$

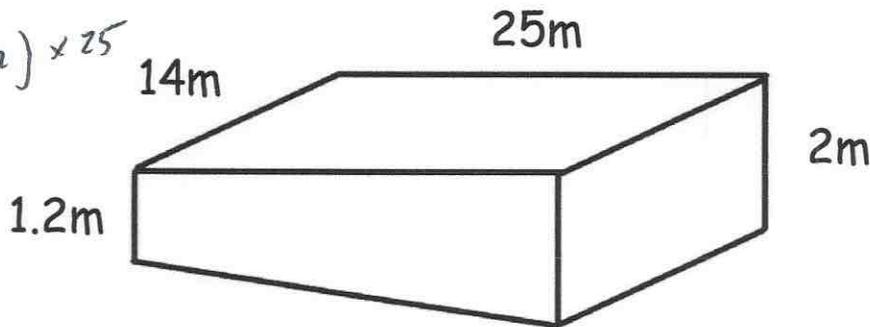Area of cross-section is $54 cm^2$

$$2100 \div 54 = ~~8/10~~ 38.88...$$

38.89 cm

(4)

to 2dp.

7.

16 Shown below is a swimming pool, that is full of water.
The swimming pool is a prism.
The cross section of the swimming pool is a trapezium.

$A = \frac{1}{2}(1.2 + 2) \times 25$

$= 40 \, m^2$

25m

14m

2m

1.2m

Kevaughn begins to empty the swimming pool at a constant rate.
The level of the water goes down by $\frac{3}{}$cm in the first 15 minutes.

Work out how long it takes in total to empty the swimming pool.
~~Give your answer to the nearest minute~~.

total volume $V = 40 \times 14$

$= 560 \, m^3$

decrease in first 15 mins $14 \times 25 \times 0.03 = 10.5 \, m^3$

decrease in 1 minute $10.5 \div 15 = 0.7 \, m^3$

$0.7 \, m^3$ per minute

$560 \div 0.7 = 800 \, minutes$

13 ....hours   20 ....minutes

(6)