

Edexcel GCSE

Mathematics (Linear) – 1MA0

VOLUME OF PRISM

Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser.
Tracing paper may be used.

Items included with question papers

Nil



Instructions

Use black ink or ball-point pen.

Fill in the boxes at the top of this page with your name, centre number and candidate number.

Answer all questions.

Answer the questions in the spaces provided – there may be more space than you need.

Calculators may be used.

Information

The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.

Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

Advice

Read each question carefully before you start to answer it.

Keep an eye on the time.

Try to answer every question.

Check your answers if you have time at the end.

1. Here is a cuboid.

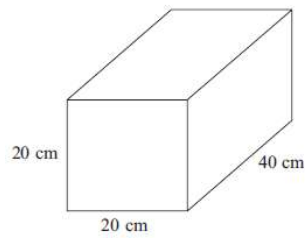


Diagram NOT
accurately drawn

Work out the volume of the cuboid.

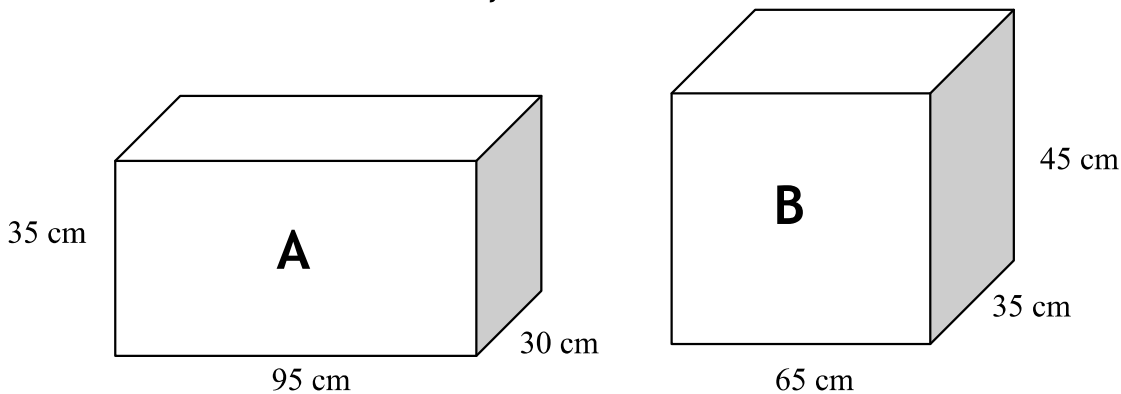
$$20 \times 20 \times 40$$

$$16000 \text{ cm}^3$$

(3 marks)

- *2. The diagram shows two fish tanks, each in the shape of a cuboid.

Diagram NOT
accurately drawn



Finley fills both fish tanks with water.

Which fish tank holds the most water?
You must show all your calculations.

$$\text{Volume of A} = 35 \times 95 \times 30 = 99750 \text{ cm}^3$$

$$\text{Volume of B} = 65 \times 45 \times 35 = 102375 \text{ cm}^3$$

Tank B will hold more water as the shape has a greater volume.

(4 marks)

3. The diagram shows a prism.

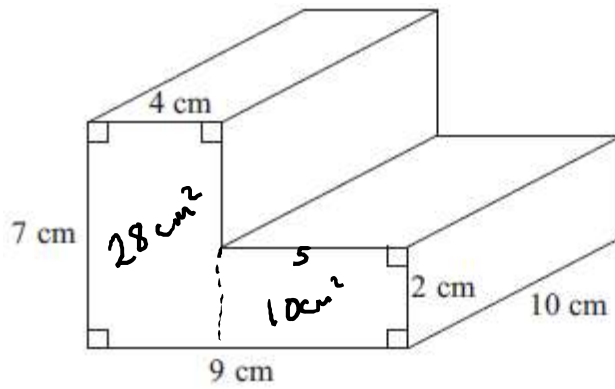


Diagram NOT
accurately drawn

Work out the volume of the prism.

$$\begin{aligned} \text{Volume} &= \text{area of cross section} \times \text{length} \\ &= 38 \times 10 \\ &= 380 \text{ cm}^3 \end{aligned}$$

.....380.....cm³

(4 marks)

4. Here is a solid prism.

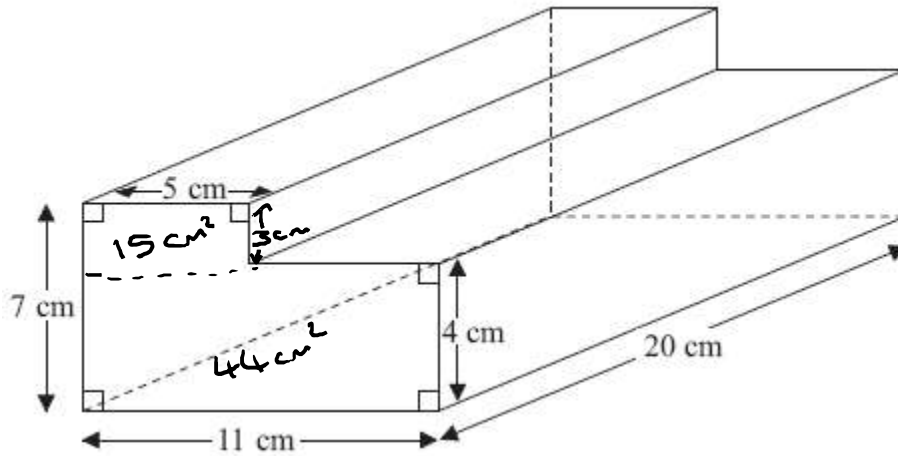


Diagram NOT
accurately drawn

Work out the volume of the prism.

$$\begin{aligned} \text{Volume} &= \text{area of cross-section} \times \text{length} \\ &= 59 \times 20 \\ &= 1180 \text{ cm}^3 \end{aligned}$$

..... 1180 cm³

(4 marks)

5.

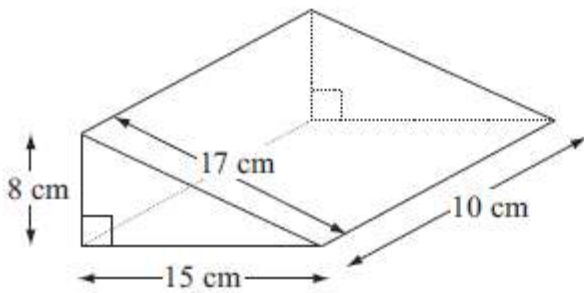


Diagram NOT
accurately drawn

Work out the volume of the triangular prism.

$$\text{Volume} = \text{area of cross section} \times \text{length}$$

$$= \frac{8 \times 15}{2} \times 10$$

$$= 60 \times 10$$

$$= 600$$

$$\dots\dots\dots 600 \text{ cm}^3$$

(4 marks)

6.

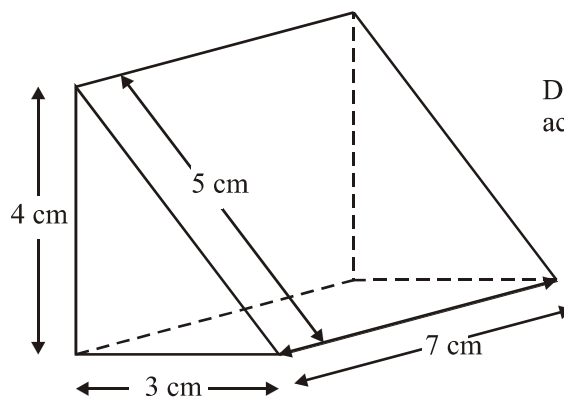


Diagram NOT
accurately drawn

Calculate the volume of the triangular prism.

$$\frac{4 \times 3}{2} \times 7$$

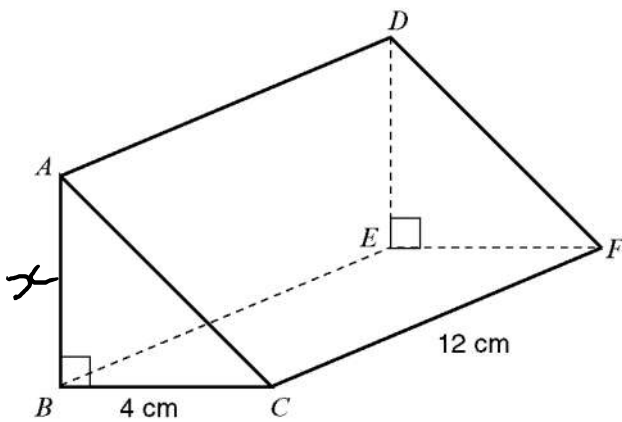
$$6 \times 7$$

$$\dots\dots\dots 42 \text{ cm}^3$$

(4 marks)

7. The diagram shows a triangular prism.

Diagram **NOT**
accurately drawn



$BC = 4$ cm, $CF = 12$ cm and angle $ABC = 90^\circ$.

The volume of the triangular prism is 84 cm³.

Work out the length of the side AB of the prism.

$$\frac{x \times 4}{2} \times 12 = 84$$

$$\frac{4x}{2} \times 12 = 84$$

$$2x \times 12 = 84$$

$$24x = 84$$

$$x = \frac{84}{24}$$

$$= \frac{42}{12}$$

$$= \frac{21}{6}$$

$$= \frac{7}{2}$$

.....
3.5 cm

(4 marks)

8. The diagram shows a triangular prism.

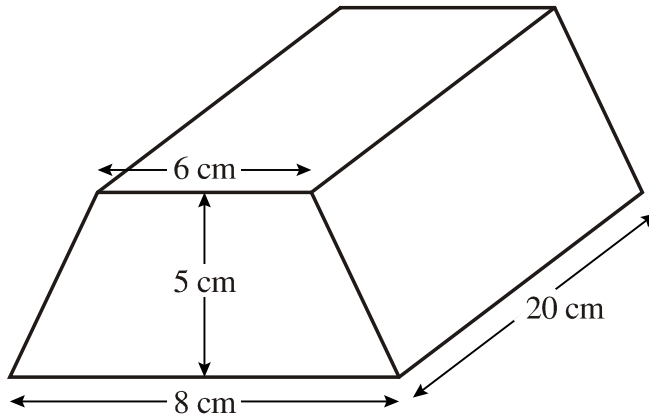


Diagram **NOT** accurately drawn.

The cross-section of the prism is a trapezium.

The lengths of the parallel sides of the trapezium are 8 cm and 6 cm.

The distance between the parallel sides of the trapezium is 5 cm.

The length of the prism is 20 cm.

Work out the volume of the prism.

$$\text{Volume} = \text{area of cross section} \times \text{length}$$

$$= \frac{8+6}{2} \times 5 \times 20$$

$$= 35 \times 20$$

$$= 700 \text{ cm}^3$$

$$\underline{\underline{700 \text{ cm}^3}}$$

(4 marks)

9.

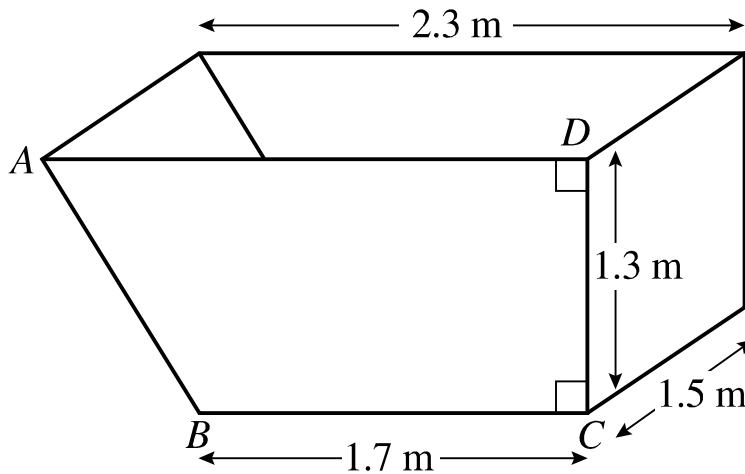


Diagram **NOT**
accurately
drawn

A skip is in the shape of a prism with cross-section $ABCD$.
 $AD = 2.3$ m, $DC = 1.3$ m and $BC = 1.7$ m.
The width of the skip is 1.5 m.

(a) Calculate the area of the shape $ABCD$.

$$\frac{1.7 + 2.3}{2} \times 1.3$$
$$2 \times 1.3$$

$$\dots\dots\dots 2.6 \text{ m}^2$$

(2 marks)

b) Calculate the volume of the skip.

$$2.6 \times 1.5 = 3.9 \text{ m}^3$$

$$\dots\dots\dots 3.9 \text{ m}^3$$

(3 marks)