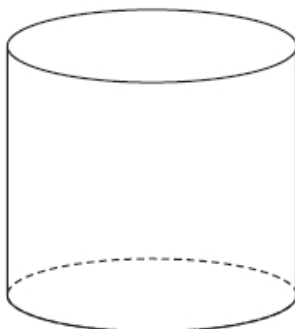




Unit 2 Revision Sheet F 3D Shapes Similarity Foundation & Higher Questions

Q1.

(a) Write down the mathematical name of this 3-D shape.



.....
(1)

Here is a solid cuboid.

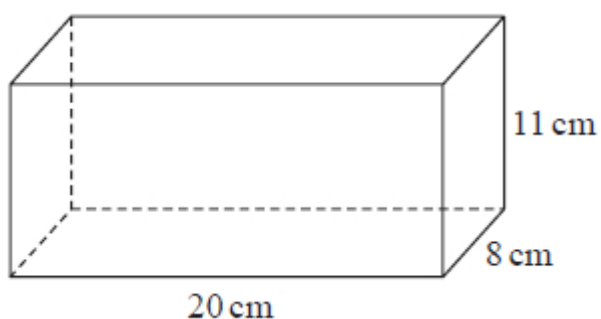


Diagram **NOT**
accurately drawn

(b) (i) How many faces has the cuboid?

.....

(ii) How many vertices has the cuboid?

.....

(2)

(c) Work out the volume of the cuboid.

..... cm³

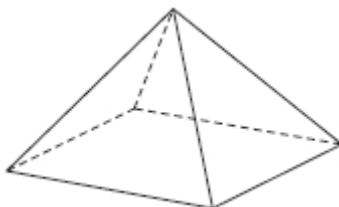
(2)

(Total for question = 5 marks)



Q2.

The diagram shows a square-based pyramid.

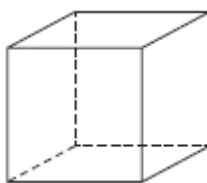


(a) How many edges has a square-based pyramid?

.....

(1)

The diagram shows a cube.



(b) How many faces has a cube?

.....

(1)

(Total for question = 2 marks)



Q3.

Here is a solid prism.

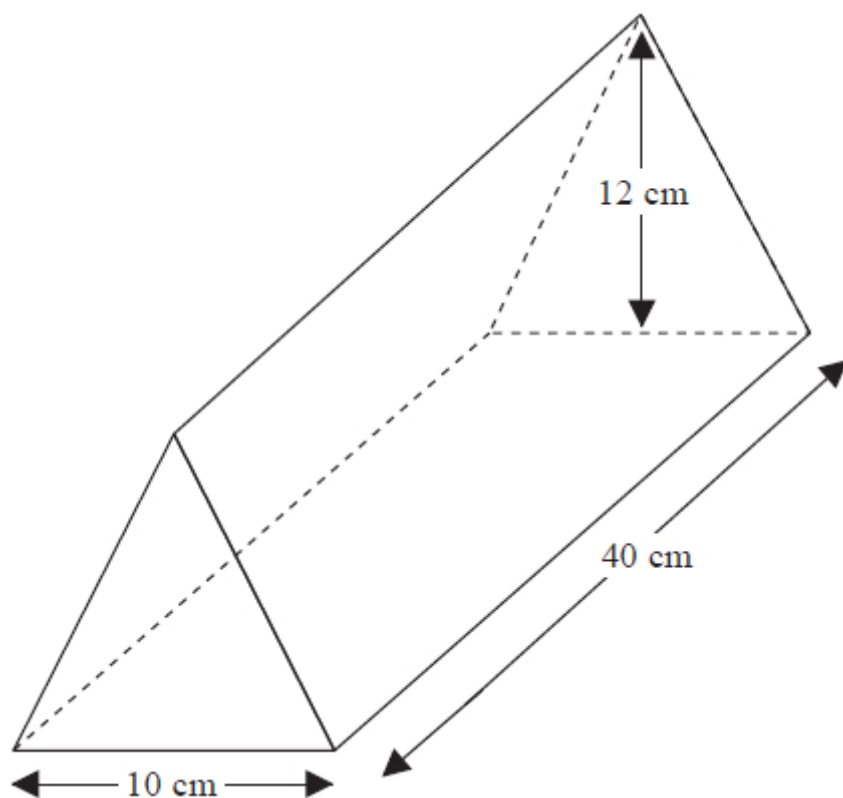


Diagram **NOT**
accurately drawn

The cross section of the prism is a triangle.

(a) How many edges has this prism?

.....
(1)

(b) How many faces has this prism?

.....
(1)



The base of the triangle is 10 cm.
The height of the triangle is 12 cm.
The length of the prism is 40 cm.

(c) Work out the volume of the prism.

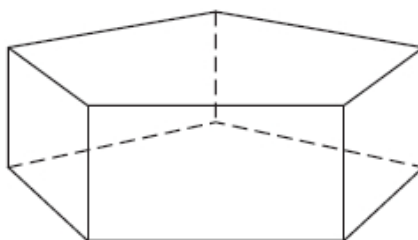
..... cm³

(2)

(Total for question = 4 marks)

Q4.

The diagram shows a solid prism.



(a) How many edges has the prism?

.....

(1)

(b) How many vertices has the prism?

.....

(1)

(c) How many faces has the prism?

.....

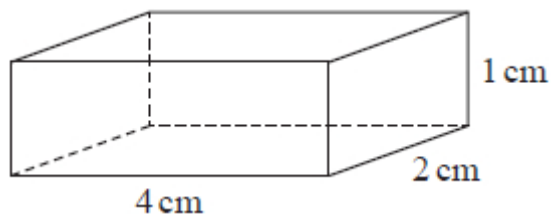
(1)

(Total for question = 3 marks)



Q5.

(a) Write down the mathematical name of this 3-D shape.



.....

(1)

(b)



Measure the length of AB .

..... cm

(1)

Here are six shapes.

A



B



C



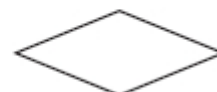
D



E



F



Two of these shapes are congruent.

(c) Write down the letters of these two shapes.

..... and

(1)

(Total for question = 3 marks)



Q6.

A cylinder has diameter 14 cm and height 20 cm.

Work out the volume of the cylinder.

Give your answer correct to 3 significant figures.

..... cm³

(Total for question = 2 marks)

Q7.

The diagram shows a solid cylinder with radius 3 m.

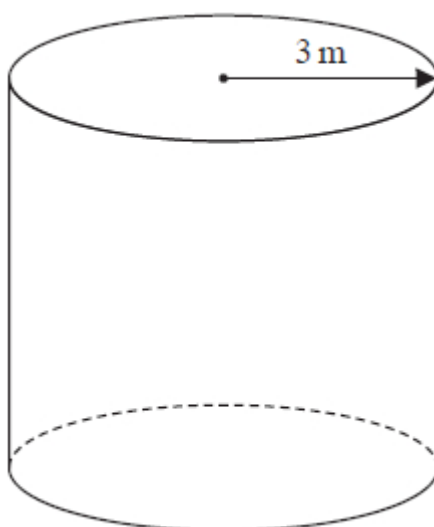


Diagram **NOT**
accurately drawn

The volume of the cylinder is $72\pi \text{ m}^3$



Calculate the **total** surface area of the cylinder.
Give your answer correct to 3 significant figures.

..... m²

(Total for question = 5 marks)

Q8.

(a) Change 8 metres into centimetres.

..... centimetres
(1)

(b) Change 9600 grams into kilograms.

..... kilograms
(1)



Jamil has 5 litres of water in a container.
He pours 750 millilitres of water into each of 6 bottles.

(c) How much water is left in the container?
Give your answer in millilitres.

..... millilitres

(3)

(Total for question = 5 marks)

Q9.

Write your answers in the spaces provided.

You must write down all the stages in your working.

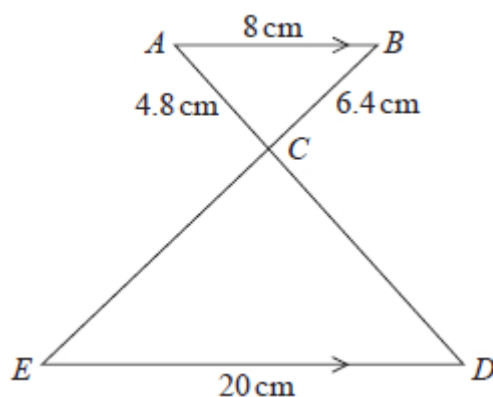


Diagram NOT
accurately drawn

AB is parallel to ED .
 ACD and BCE are straight lines.

$AB = 8$ cm
 $AC = 4.8$ cm
 $BC = 6.4$ cm
 $ED = 20$ cm

Work out the length of BE .

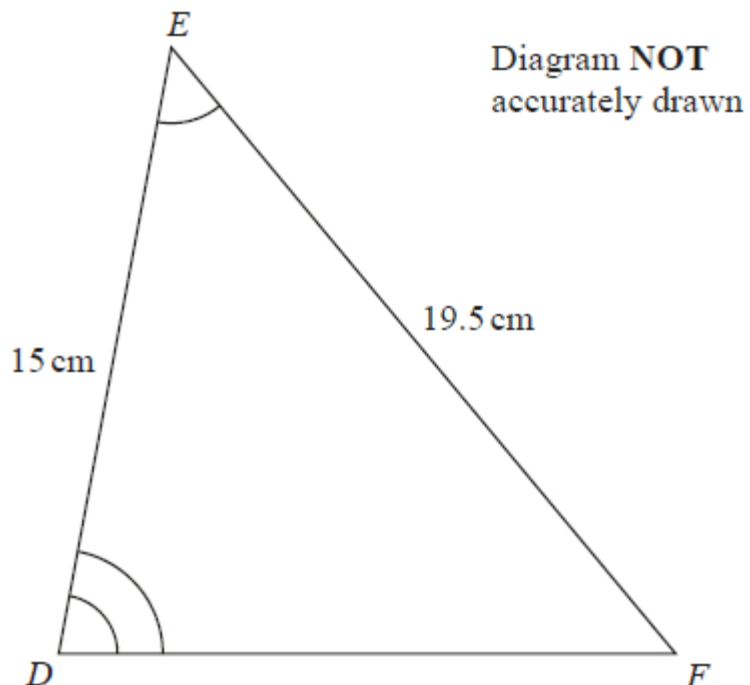
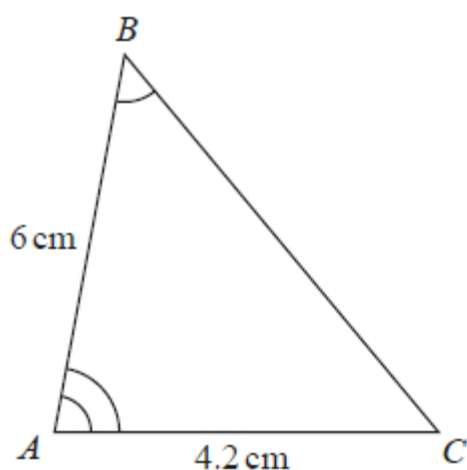
cm

(Total for question = 3 marks)



Q10.

ABC and DEF are similar triangles.



(a) Work out the length of DF .

..... cm
(2)

(b) Work out the length of BC .

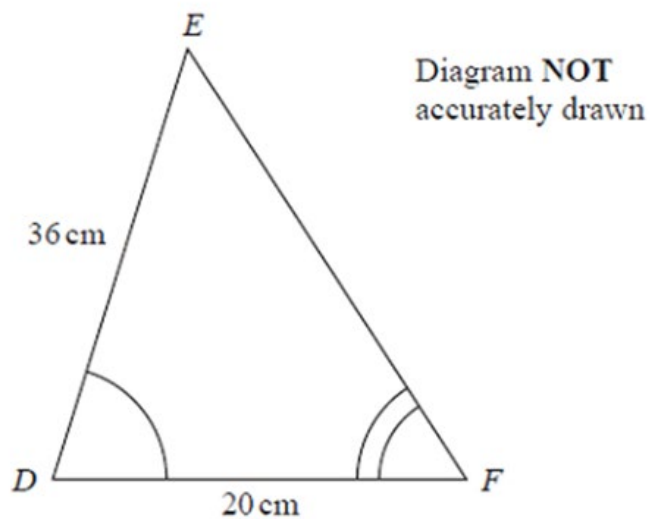
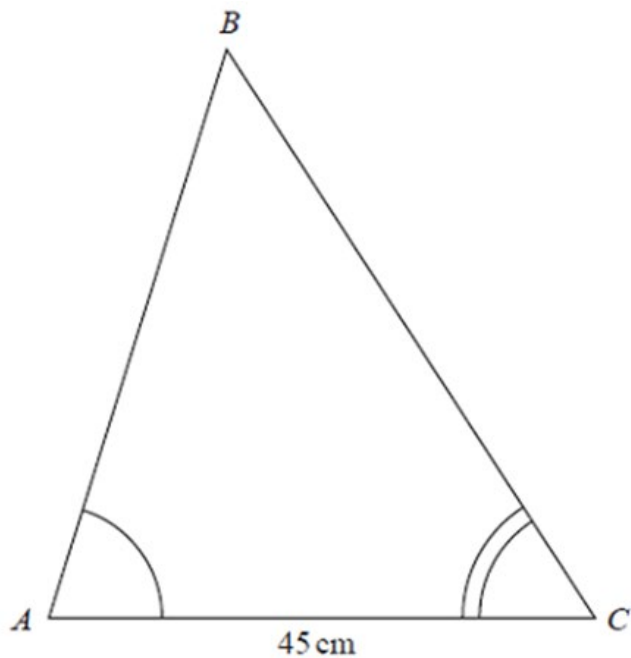
..... cm
(2)

(Total for question = 4 marks)



Q11.

ABC and DEF are similar triangles.



(a) Work out the length of AB .

..... cm
(2)

Given that $BC = 54$ cm,

(b) Work out the length of EF .

..... cm
(2)

(Total for question = 4 marks)



Mark Scheme

Q1.

Q	Working	Answer	Mark	Notes
(a)		cylinder	1	B1
(b)(i)		6	1	B1
(b)(ii)		8	1	B1
(c)	$20 \times 8 \times 11$		2	M1
		1760		A1
				Total 5 marks

Q2.

Q	Working	Answer	Mark	Notes
(a)		8	1	B1
(b)		6	1	B1
				Total 2 marks

Q3.

Q	Working	Answer	Mark	Notes
(a)		9	1	B1
(b)		5	1	B1
(c)	$0.5 \times 10 \times 12 \times 40$	2400	2	M1 A1 $0.5 \times 10 \times 12 \times 40$ cao
				Total 4 marks

Q4.

Question	Working	Answer	Mark	Notes
(a)		15	1	B1
(b)		10	1	B1
(c)		7	1	B1
				Total 3 marks



Q5.

Question	Working	Answer	Mark	Notes
(a)		cuboid	1	B1 Accept rectangular cuboid or rectangular prism. Do not accept cube
(b)		6.5	1	B1 Accept 6.4 – 6.6
(c)		A and F	1	B1 May be stated or could be circled in list
Total 3 marks				

Q6.

Question	Working	Answer	Mark	Notes
	$\pi \times 7^2 \times 20 (= 3078.76\dots)$ or 980π			M1 for complete method to find volume
		3080	2	A1 for answer in range 3077.2 – 3080
Total 2 marks				

Q7.

Q	Working	Answer	Mark	Notes
	$\pi \times 3^2 \times h = 72\pi$ oe		5	M1 Allow use of 3.14... or $\frac{22}{7}$ for π and use of 226... for 72π
	$h = 72\pi \div (\pi \times 3^2)$ oe or $h = 8$			M1 method to isolate h (may be seen in several stages)
	$2 \times \pi \times 3^2 (= 18\pi$ or $56.54\dots)$ or $2 \times \pi \times 3 \times "8"$ oe ($= 48\pi$ or 150 - 151)			M1 method to find the area of the two circles or curved surface area – use of their h , dep on M1 (NB may get this mark for area of 2 circles with no previous marks awarded)
	$2 \times \pi \times 3^2 + 2 \times \pi \times 3 \times "8"$ oe ($= 66\pi$)			M1 complete method to find the total surface area ft their h dep on 1st M1, including intention to add, to find the total surface area
		207		A1 accept 207-208
Total 5 marks				



Q8.

Q	Working	Answer	Mark	Notes
a		800	1	B1
b		9.6	1	B1
c	$5 \times 1000 (=5000)$ or $6 \times 750 (=4500)$			M1
	$5 \times 1000 - 6 \times 750$			M1 for complete method
		500	3	A1
				Total 5 marks

Q9.

Question	Working	Answer	Mark	Notes
	$\frac{20}{8}$ oe or 2.5 oe or $\frac{8}{20}$ oe or 0.4 oe			M1 for a correct scale factor
	Eg $6.4 \times \frac{20}{8} + 6.4$ or			M1 for a complete method to find BE
	$CE = 6.4 \div \frac{8}{20} + 6.4$			
		22.4	3	A1



Q10.

Question	Working	Answer	Mark	Notes
(a)	$\frac{15}{6}$ or $\frac{6}{15}$ or $\frac{4.2}{6}$ or $\frac{6}{4.2}$ oe 2.5 or 0.4 or 0.7 or 1.4(2857.....)			M1 for a correct scale factor, accept ratio notation eg 6 : 15
		10.5	2	A1 oe
(b)	$19.5 \div 2.5$ or 19.5×0.4 oe or $4.2 \times \frac{19.5}{(a)}$			M1 If using DF ft their answer from part (a)
		7.8	2	A1 oe
				Total 4 marks

Q11.

Q	Working	Answer	Mark	Notes
(a)	$\frac{45}{20}$ or $\frac{20}{45}$ or $\frac{36}{20}$ or $\frac{20}{36}$ oe 2.25 or 0.44(44...) or 1.8 or 0.55(55...)		2	M1 for a correct scale factor, accept ratio notation eg 45 : 20
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	81		A1
(b)	$54 \div 2.25$ or $54 \times 0.44(44...)$ oe or $36 \times \frac{54}{'81'}$		2	M1 can ft if M1 scored in (a)
	<i>Correct answer scores full marks (unless from obvious incorrect working)</i>	24		A1
				Total 4 marks