YSGOL Bassaleg SCHOOL

Mathematics

Calculator Higher Paper

Nov 2010 Pilot 2nd half

Name:

Initial reflection:

Assessor:

Feedback:

Question	Maximum Mark	Mark Awarded
11	9	
12	3	
13	5	
14	6	
15	4	
16	8	
17	5	
18	7	
19	9	
TOTAL MARK		

Response:

Examiner only

11. *(a)*

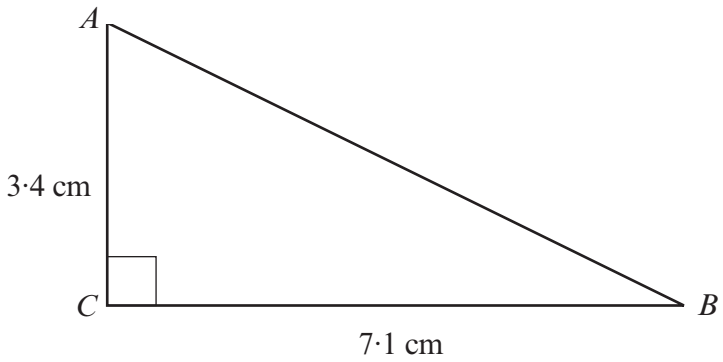

Diagram not drawn to scale

Calculate the length of AB.

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[3]

(b)

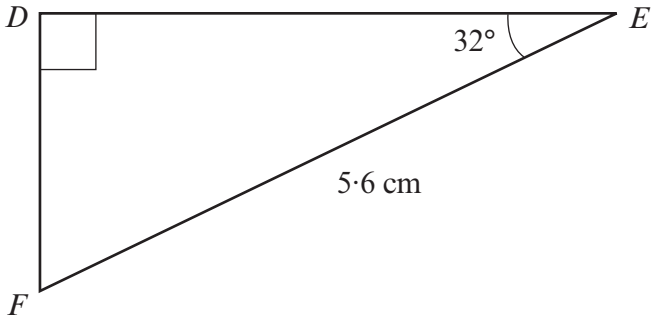

Diagram not drawn to scale

Calculate the length of DF.

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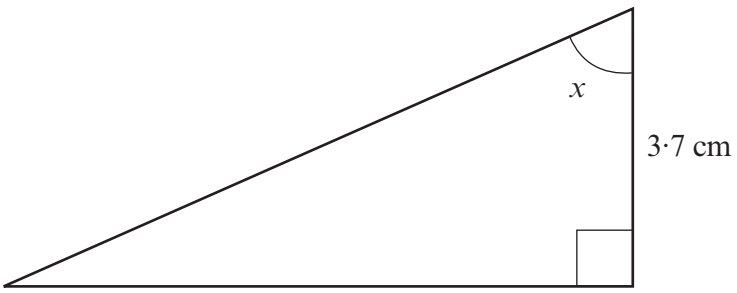
[3]

Examiner only

(c)



13·4 cm

Diagram not drawn to scale

Calculate the size of angle x.

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[3]

Examiner only

12. *(a)* On the graph paper provided, draw the region which satisfies all of the following inequalities.

$$y \leqslant 8$$
$$y \geqslant 2x + 5$$
$$x \geqslant -3$$

Make sure that you clearly indicate the region that represents your answer.

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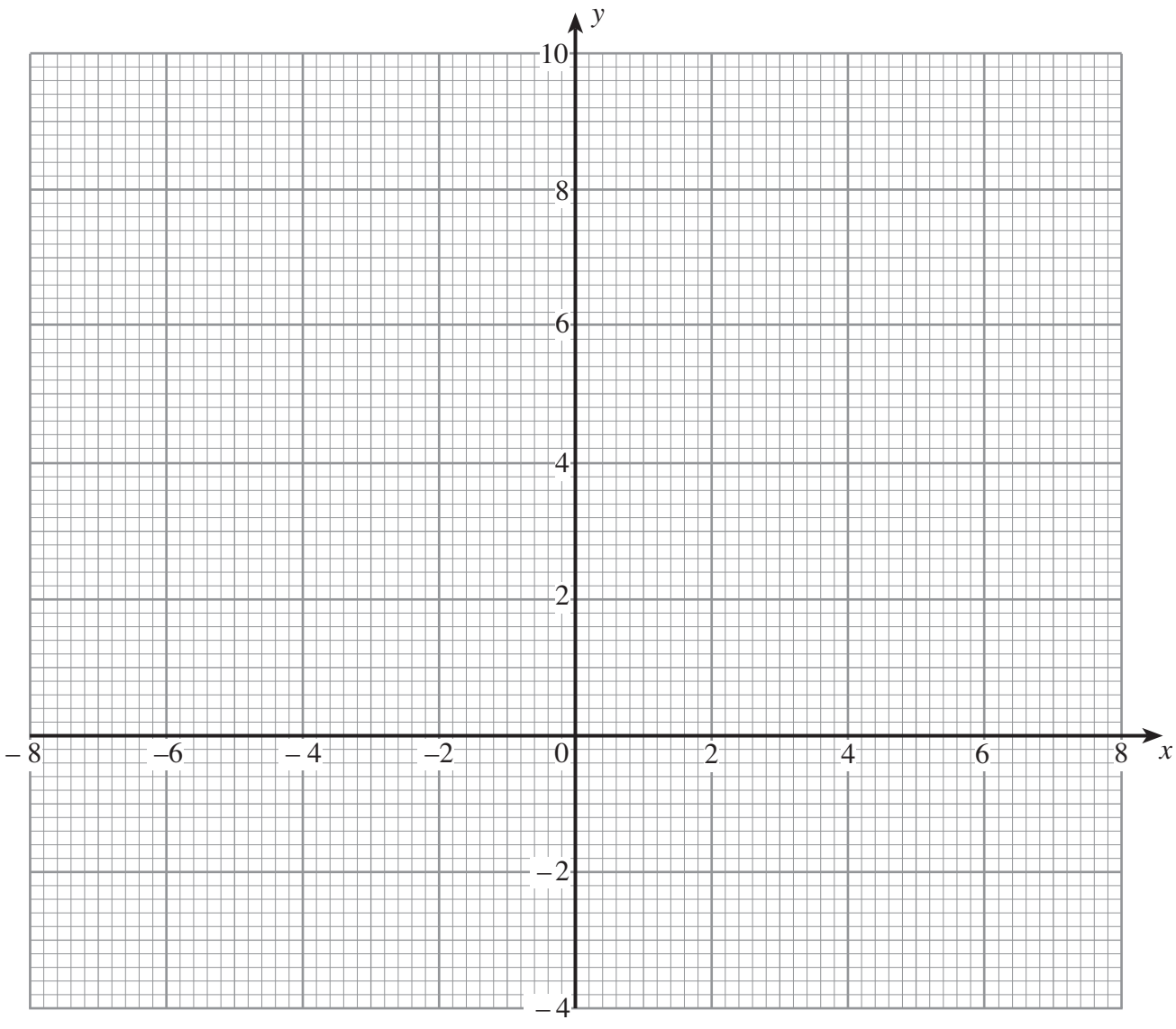
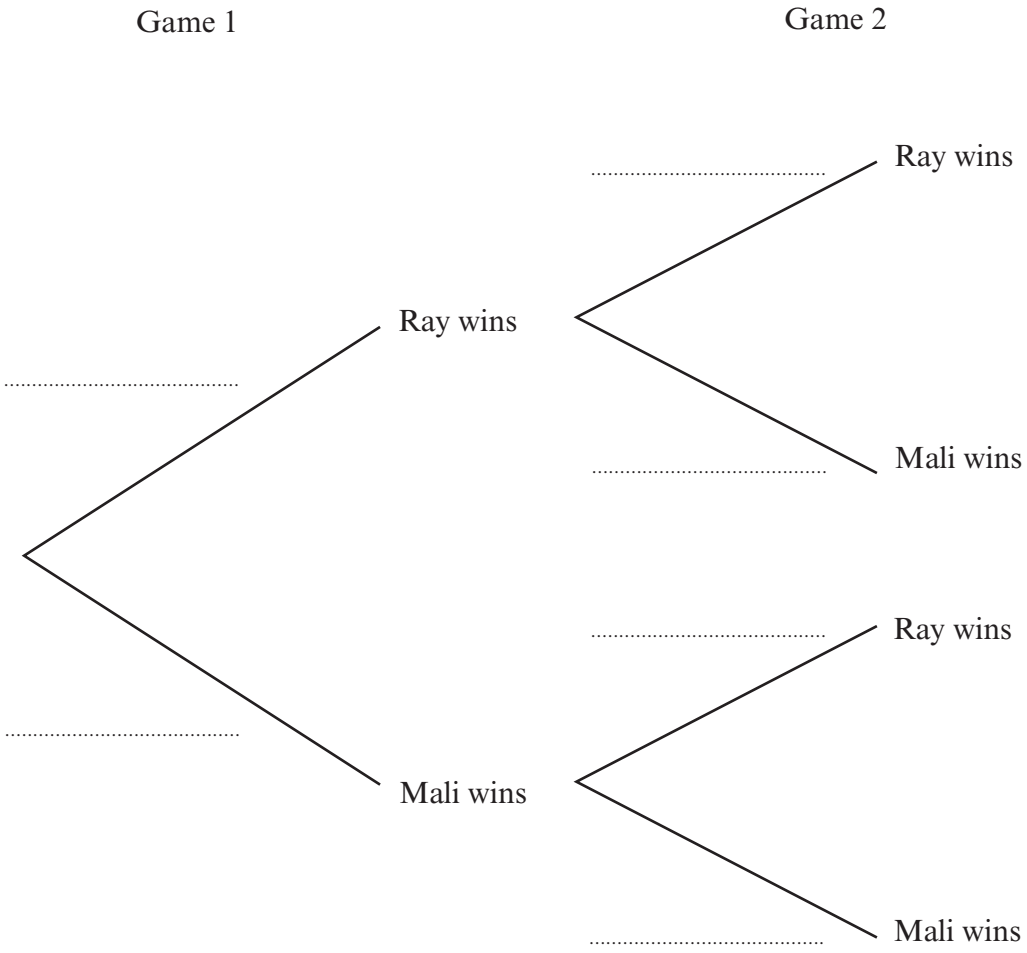


Examiner only

13. Whenever Ray and Mali play a game of table tennis the probability that Ray wins is 0·4. No game of table tennis ends in a draw.

(a) Complete the following tree diagram to show the probabilities of what can happen when Ray and Mali play two games of table tennis.



[2]

(b) Calculate the probability that Mali wins exactly one game.

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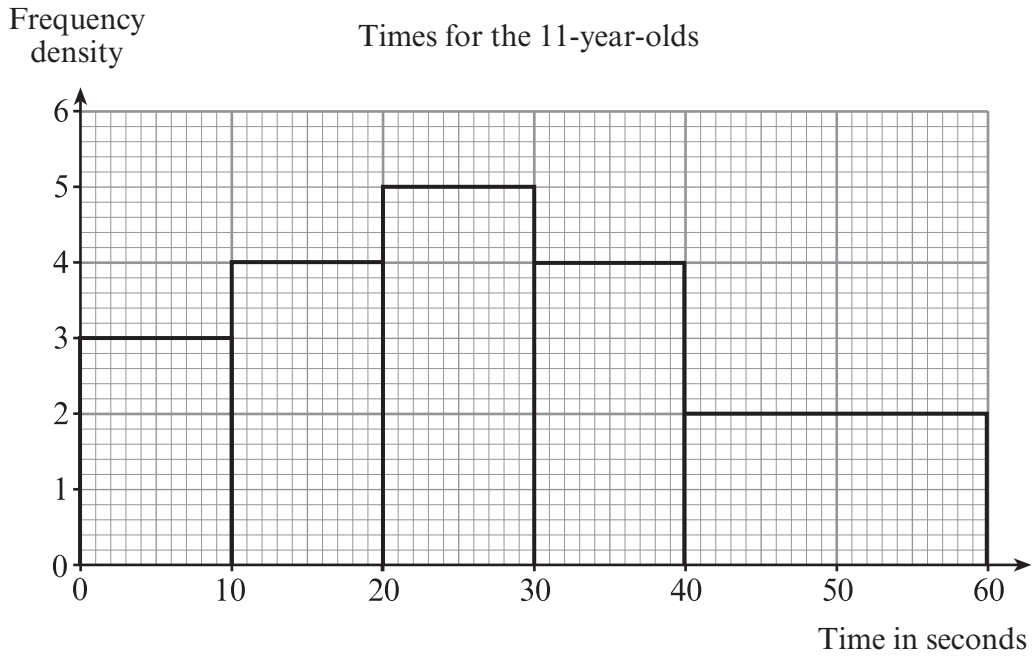
[3]

Turn over.

Examiner only

14. As part of an investigation, the time taken to lace and tie a pair of boots was measured for each pupil in a group of eleven-year-olds.
The histogram below illustrates the results obtained.



(a) Use the histogram to calculate the number of eleven-year-olds in this group.

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[3]

Examiner only

(b) The time taken to lace and tie a pair of boots was measured for each pupil in a group of 200 sixteen-year-olds.
The following grouped frequency distribution was obtained.

Time, t seconds	$0 < t \leqslant 10$	$10 < t \leqslant 20$	$20 < t \leqslant 30$	$30 < t \leqslant 40$	$40 < t \leqslant 60$
Number of pupils	45	55	65	25	10

(i) Find an estimate for the median of this distribution.

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(ii) Draw a histogram to illustrate the distribution on the graph paper below.

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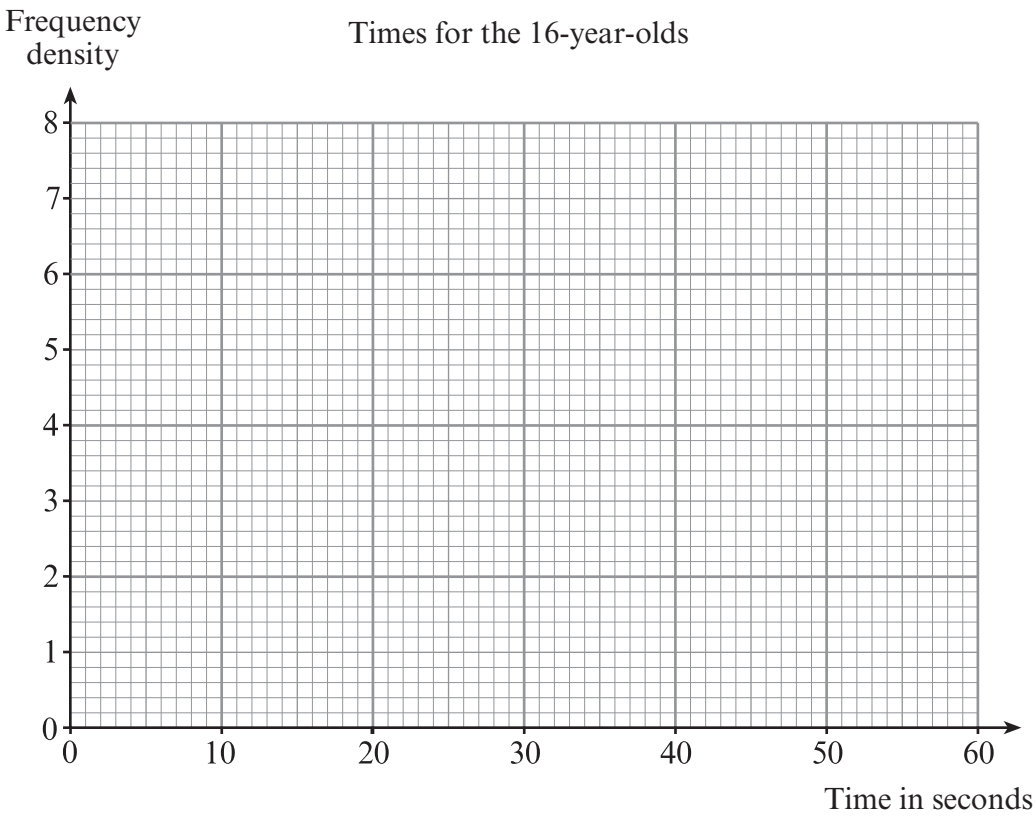

Examiner only

15. The triangles *ABC* and *DEF* are similar.

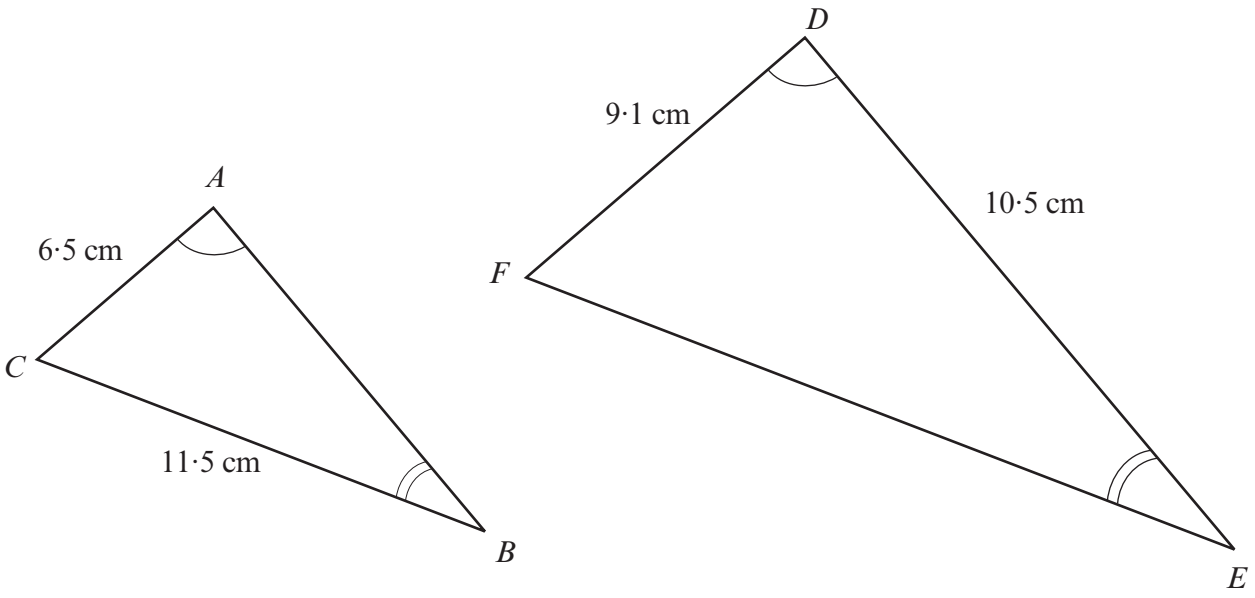

Diagram not drawn to scale

Calculate the lengths of the following sides.

(a) *FE*

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[2]

(b) *AB*

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[2]

Examiner only

16. A rectangle has a length of $(5x + 6)$ cm, a width of $(3x + 2)$ cm and an area of 56 cm^2.

(a) Show that $15x^2 + 28x - 44 = 0$.

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[3]

(b) Use the formula method to solve the equation $15x^2 + 28x - 44 = 0$, giving solutions correct to two decimal places.

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[3]

(c) Hence write down the length of the rectangle.

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Examiner only

17. A bag contains 25 beans.
There are 3 green, 5 white, 8 black and 9 red beans in the bag.
Two beans are selected at random from the bag.

(a) Calculate the probability that both of the beans selected are red.

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(b) Calculate the probability that a green and a black bean are selected.

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Examiner only

18.

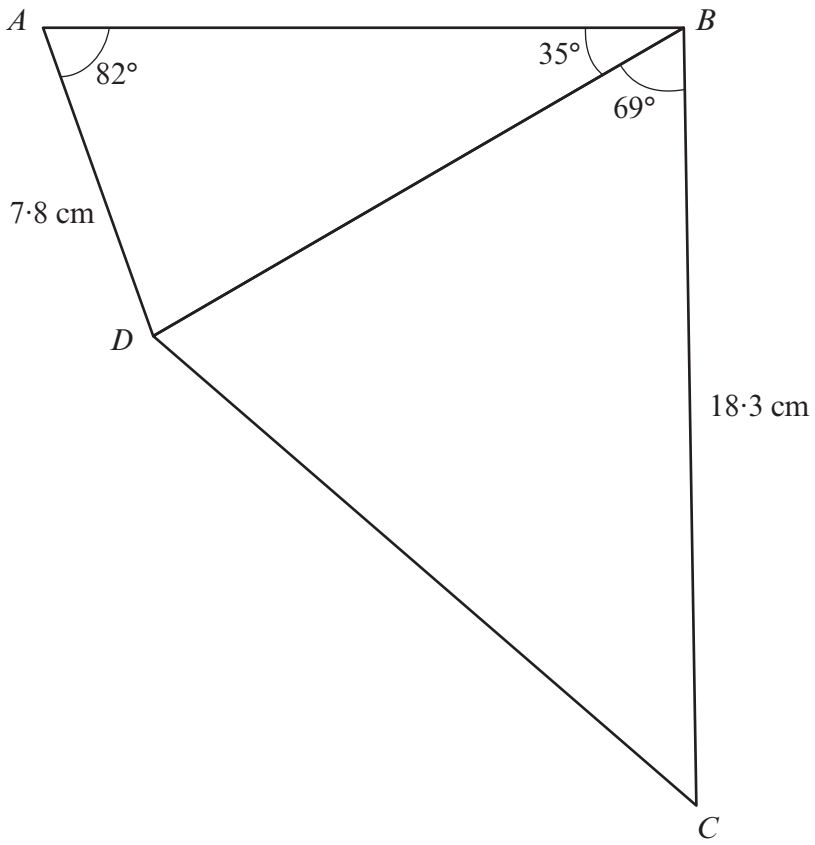

Diagram not drawn to scale

Find the length of *CD*.

[7]

Examiner only

19. *(a)* The volume of a **hemisphere** is 7π cm^3.
Calculate the radius of the hemisphere.

[4]

(b) The cross section of this prism is a regular hexagon.

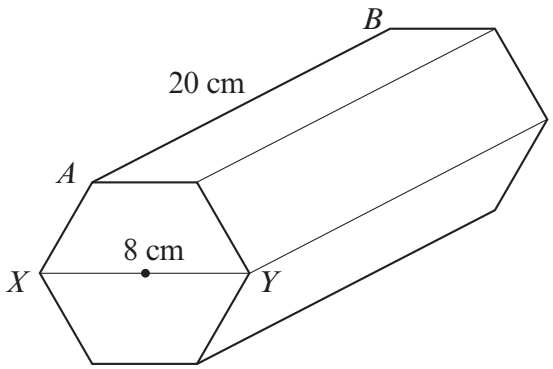

Diagram not drawn to scale

Given that $XY = 8$ cm and $AB = 20$ cm, find the volume of the prism.

[5]