

1MA1 Higher themed papers: Similarity

Write your name here	
Surname	Other names
Centre Number	Candidate Number
Pearson Edexcel Level 1/Level 2 GCSE (9–1)	
Mathematics Similarity	
	Paper Reference 1MA1
You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.	
Total Marks	

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.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

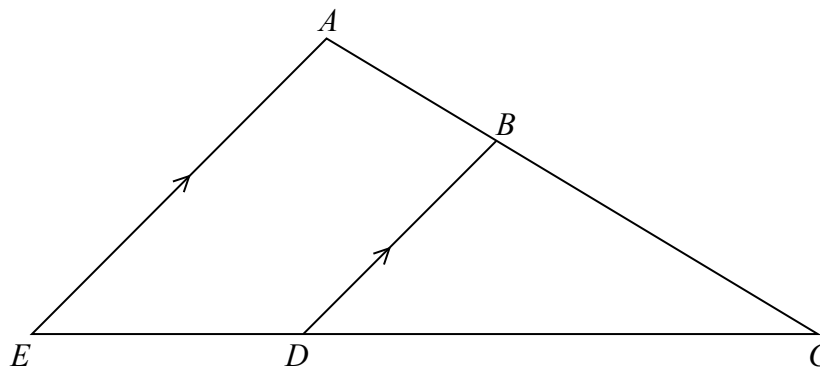
Information

- The total mark for this paper is **27**. There are **8** questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by all students in the June 2017–November 2019 examinations.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

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



ABC and EDC are straight lines.
 EA is parallel to DB .

$EC = 8.1$ cm.
 $DC = 5.4$ cm.
 $DB = 2.6$ cm.

(a) Work out the length of AE .

..... cm
 (2)

$AC = 6.15$ cm.

(b) Work out the length of AB .

..... cm
 (2)

(Total for Question 1 is 4 marks)

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- 2 Here are two similar solid shapes.

A



B



surface area of shape **A** : surface area of shape **B** = 3 : 4

The volume of shape **B** is 10 cm^3

Work out the volume of shape **A**.

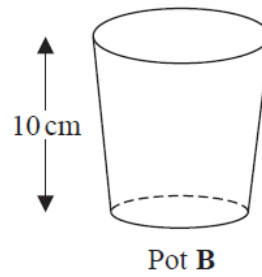
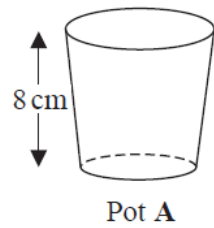
Give your answer correct to 3 significant figures.

..... cm^3

(Total for Question 2 is 3 marks)

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3 Here are two pots.



Pot **A** and pot **B** are mathematically similar.

The area of the base of pot **B** is 160 cm^2 .

Work out the area of the base of pot **A**.

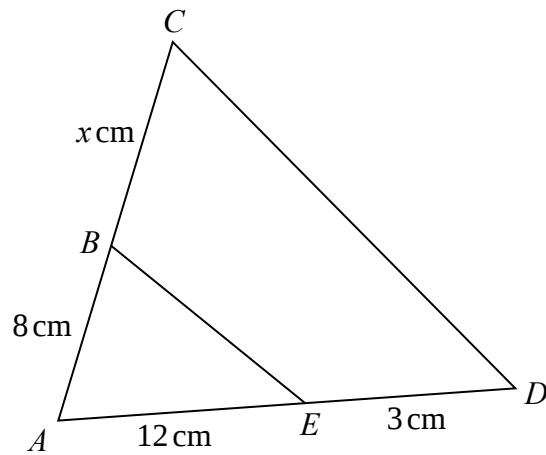
..... cm^2

(Total for Question 3 is 2 marks)

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- 4 The two triangles in the diagram are similar.



There are two possible values of x .

Work out each of these values.

State any assumptions you make in your working.

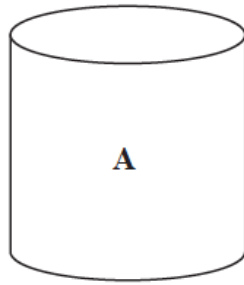
(Total for Question 4 is 5 marks)

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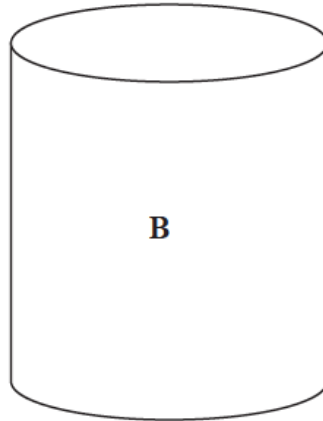


5

A and **B** are two similar cylindrical containers.



A



B

the surface area of container **A** : the surface area of container **B** = 4 : 9

Tyler fills container **A** with water.

She then pours all the water into container **B**.

Tyler repeats this and stops when container **B** is full of water.

Work out the number of times that Tyler fills container **A** with water.

You must show all your working.

.....
(Total for Question 5 is 4 marks)

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6

Three solid shapes **A**, **B** and **C** are similar.

The surface area of shape **A** is 4 cm^2

The surface area of shape **B** is 25 cm^2

The ratio of the volume of shape **B** to the volume of shape **C** is $27 : 64$

Work out the ratio of the height of shape **A** to the height of shape **C**.

Give your answer in its simplest form.

.....
(Total for Question 6 is 4 marks)

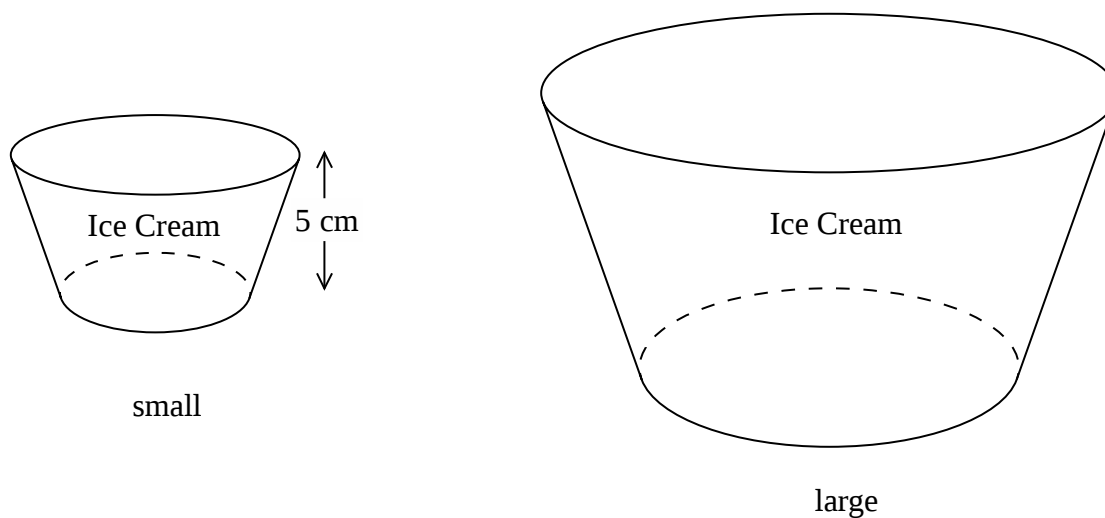
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- 7 Cone **A** and cone **B** are mathematically similar.
The ratio of the volume of cone **A** to the volume of cone **B** is 27 : 8
The surface area of cone **A** is 297 cm^2
Show that the surface area of cone **B** is 132 cm^2

(Total for Question 7 is 3 marks)

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- 8** A factory makes ice cream tubs in two sizes, small and large.



The tubs are similar in shape.

The height of the small tub is 5 cm.

The volume of the small tub is 150 cm^3 .

The volume of the large tub is 500 cm^3 .

Work out the height of the large tub.

Give your answer correct to 3 significant figures.

.....cm

(Total for Question 8 is 2 marks)

TOTAL MARKS FOR PAPER: 27