

## 1MA1 Foundation themed papers: Similarity and Congruence

Write your name here			
Surname	Other names		
Centre Number		Candidate Number	
Pearson Edexcel Level 1/Level 2 GCSE (9–1)			
<b>Mathematics</b>			
<b>Similarity and Congruence</b>			
			Paper Reference <b>1MA1</b>
<b>You must have:</b> 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  $\pi$  button, take the value of  $\pi$  to be 3.142 unless the question instructs otherwise.

### Information

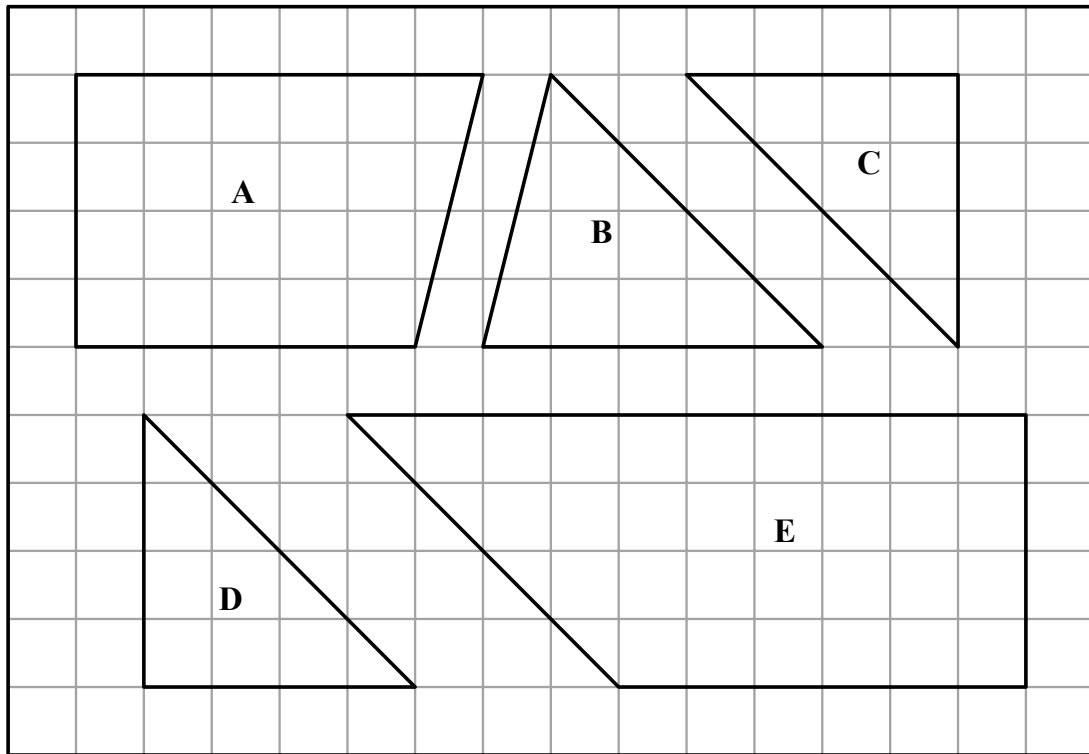
- The total mark for this paper is **20**. There are **7** questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by all students in the June 2017–November 2019 examinations.
- The marks for **each** question are shown in brackets – *use this as a guide as to how 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.

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**1** The diagram shows five shapes on a centimetre grid.



(a) Write down the name of shape **E**.

.....  
**(1)**

Two of the shapes are congruent.

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

..... and .....

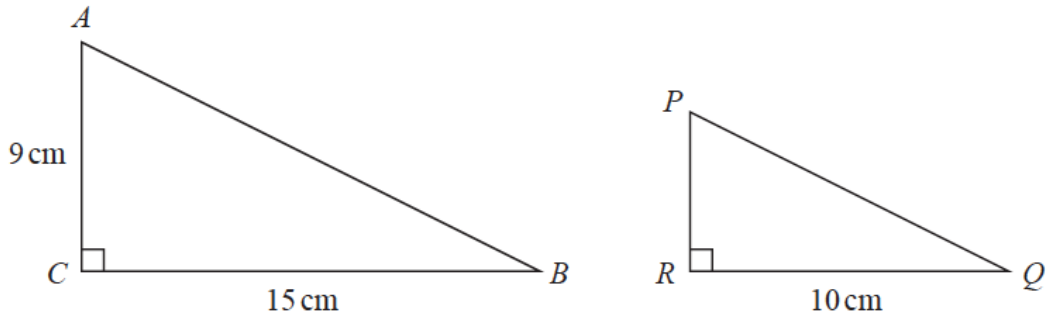
**(1)**

**(Total for Question 1 is 2 marks)**

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2  $ABC$  and  $PQR$  are similar right-angled triangles.

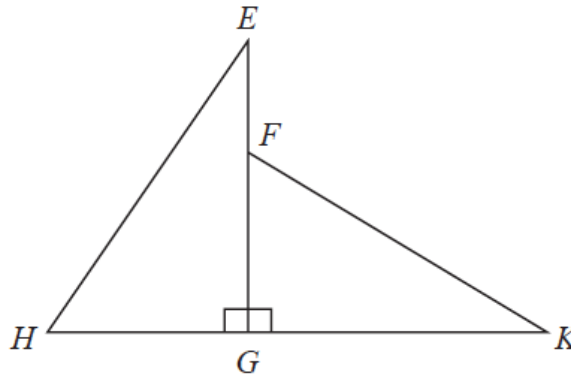


angle  $ABC =$  angle  $PQR$

(a) Work out the length of  $PR$ .

..... cm  
(2)

Triangle  $EGH$  is congruent to triangle  $KGF$ .



$HK = 10$  cm.

$HG = 4$  cm.

(b) Work out the length of  $EF$ .

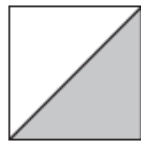
..... cm  
(2)

**(Total for Question 2 is 4 marks)**

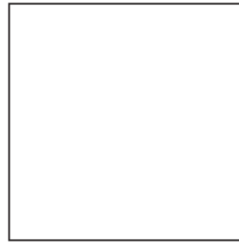
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**3** Here are two squares, **A** and **B**.



**A**



**B**

The length of the side of square **A** is 50% of the length of the side of square **B**.

Express the area of the shaded region of square **A** as a percentage of the area of square **B**.

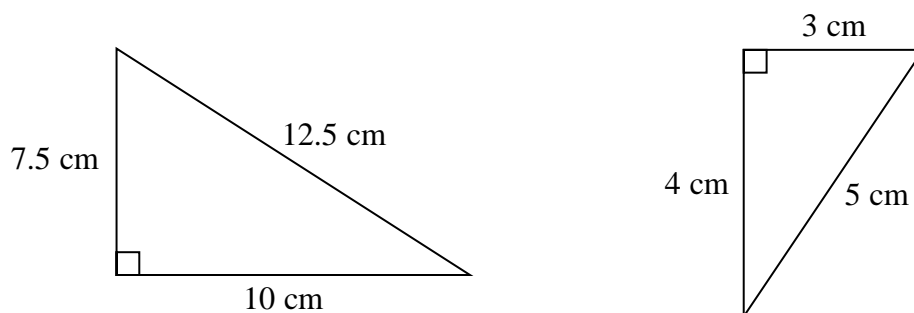
..... %

**(Total for Question 4 is 3 marks)**

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**4**



Show that these two triangles are mathematically similar.

**(Total for Question 7 is 2 marks)**

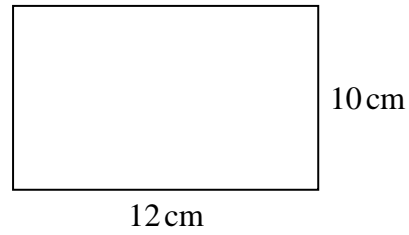
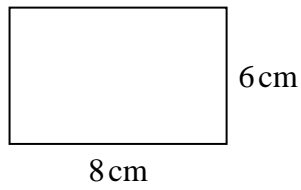
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5

Here are two rectangles.



Jim says,

“The two rectangles are similar because  $8 + 4 = 12$  and  $6 + 4 = 10$ ”

Is Jim correct?

Explain your answer.

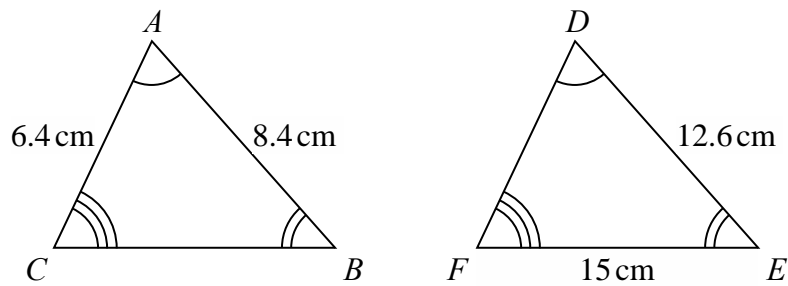
.....

.....

**(Total for Question 5 is 1 mark)**

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**6** Triangle  $ABC$  and triangle  $DEF$  are similar.



(a) Work out the length of  $DF$ .

..... cm  
(2)

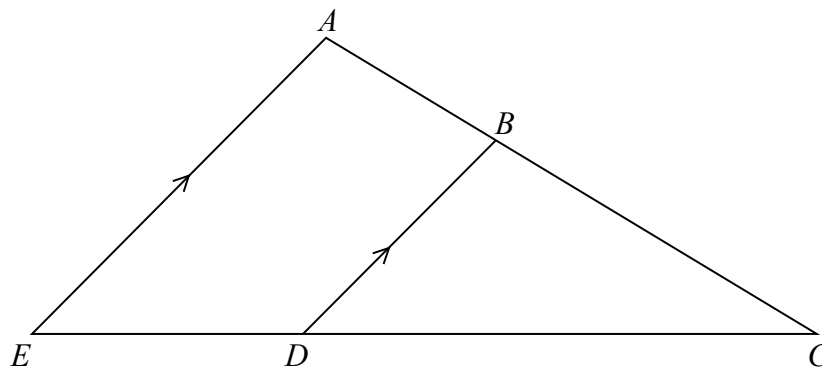
(b) Work out the length of  $CB$ .

..... cm  
(2)

**(Total for Question 3 is 4 marks)**

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7



$ABC$  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 6 is 4 marks)

**TOTAL MARKS FOR PAPER: 20**