

Name

Class

# MATHS TEACHER HUB

www.MathsTeacherHub.com

## Similarity and congruence

(9 – 1) Topic booklet

These questions have been collated from previous years GCSE Mathematics papers.

**You must have:** Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

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.*
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
- If the question is a **1F** question you are not allowed to use a calculator.
- If the question is a **2F** or a **3F** question, you may use a calculator to help you answer.

### 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.*

### 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.

**Answer ALL questions**  
**Write your answers in the space provided.**  
**You must write down all the stages in your working.**

- 9 The smallest angle of a triangle is  $25^\circ$   
The triangle is enlarged by scale factor 3

Ben says,

“The smallest angle of the enlarged triangle is  $75^\circ$  because  $25 \times 3 = 75$ ”

Is Ben right?  
Explain your answer.

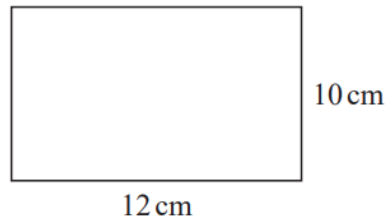
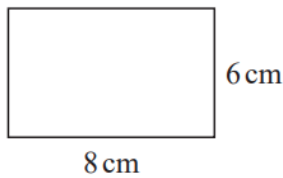
.....

.....

Specimen 2 – Paper 2F

**(Total for Question 9 is 1 mark)**

- 16 Here are two rectangles.



Jim says,

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

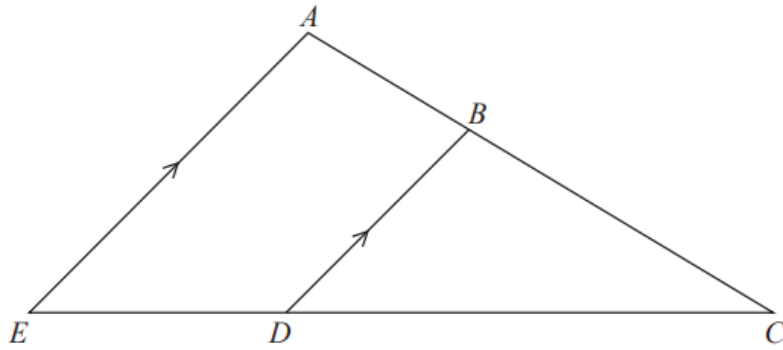
Is Jim correct?  
Explain your answer.

.....

.....

November 2018 – Paper 1F

**(Total for Question 16 is 1 mark)**



$ABC$  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  $AE$ .

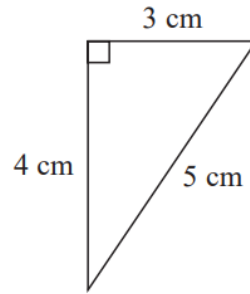
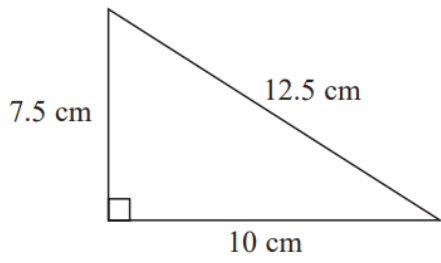
..... cm  
 (2)

$AC = 6.15$  cm.

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

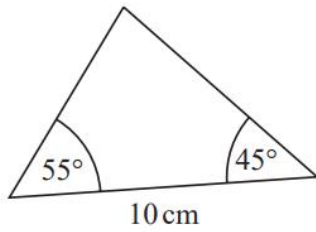
..... cm  
 (2)

21

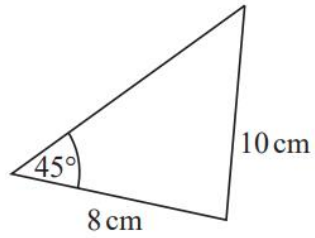


Show that these two triangles are mathematically similar.

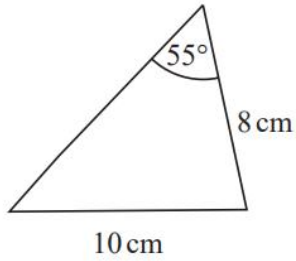
23 The diagram shows four triangles.



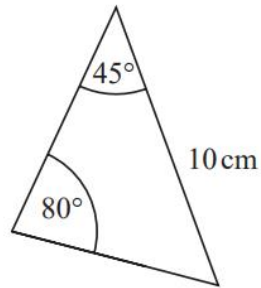
Triangle A



Triangle B



Triangle C



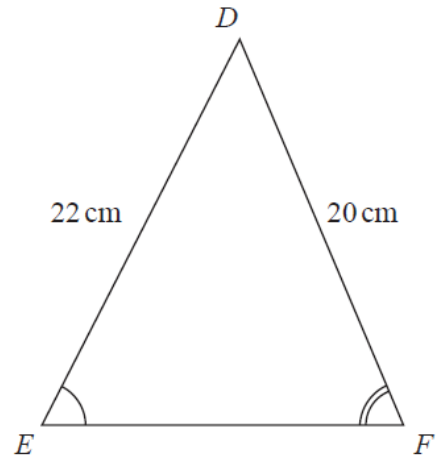
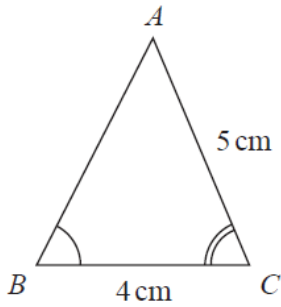
Triangle D

Two of these triangles are congruent.

Write down the letters of these two triangles.

..... and .....

25 Triangle  $ABC$  and triangle  $DEF$  are similar.



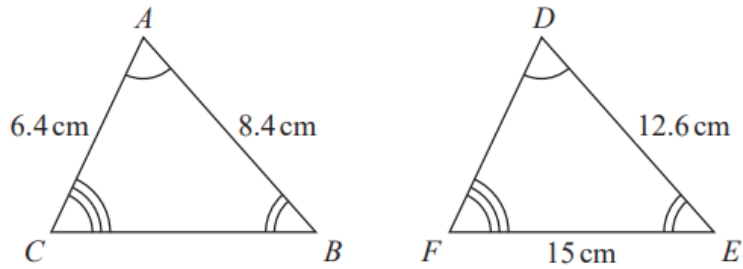
(a) Work out the length of  $EF$ .

..... cm  
(2)

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

..... cm  
(2)

27 Triangle  $ABC$  and triangle  $DEF$  are similar.



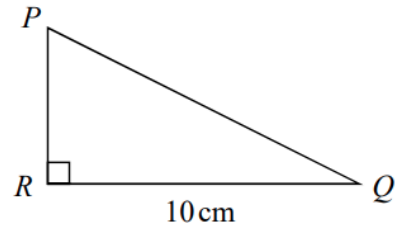
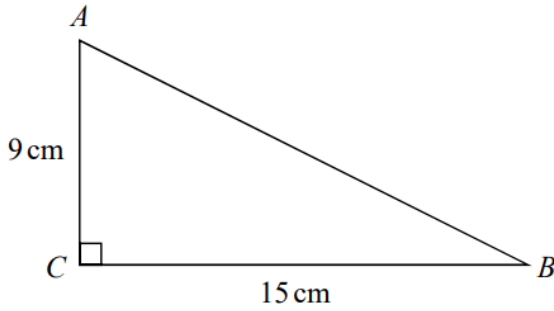
(a) Work out the length of  $DF$ .

..... cm  
(2)

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

..... cm  
(2)

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

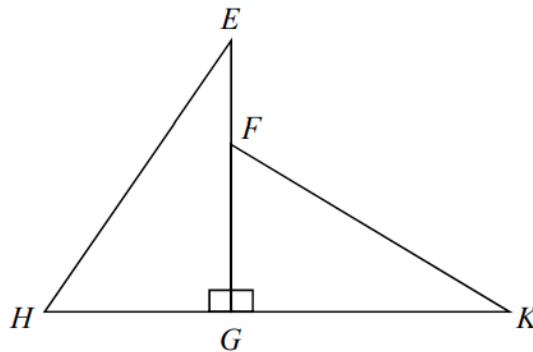


angle  $ABC = \text{angle } PQR$

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

..... cm  
(2)

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



$HK = 10\text{ cm}$ .

$HG = 4\text{ cm}$ .

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

..... cm  
(2)