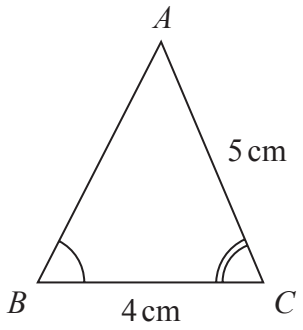
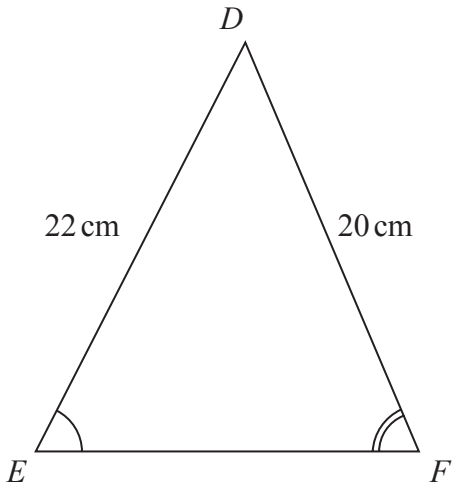
1 Triangle *ABC* and triangle *DEF* are similar.





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

..... cm

(2)

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

..... cm

(2)

(Total for Question 1 is 4 marks)

2 *ABC* and *DEF* are similar triangles.

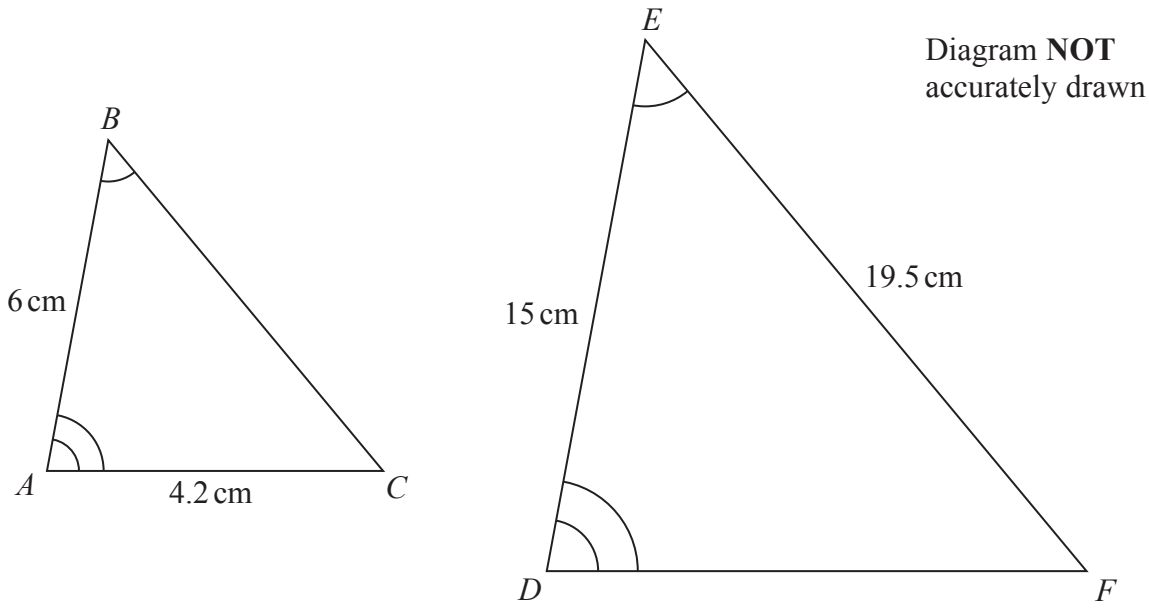


Diagram **NOT** accurately drawn

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

.....cm

(2)

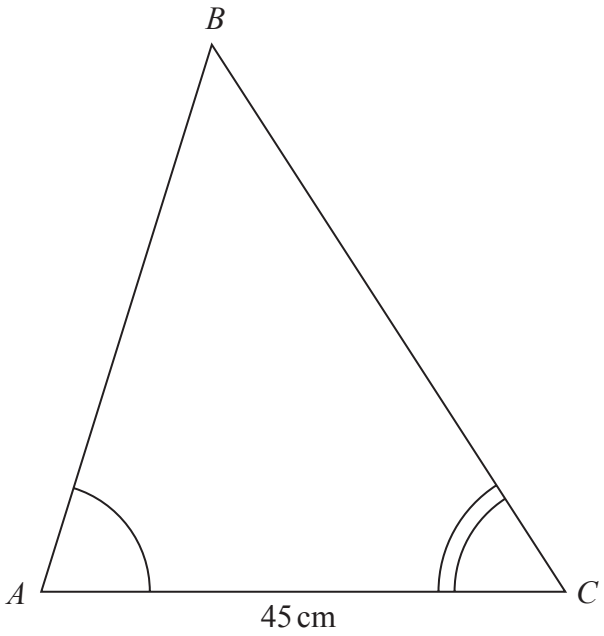
(b) Work out the length of *BC*.

.....cm

(2)

(Total for Question 2 is 4 marks)

3 *ABC* and *DEF* are similar triangles.



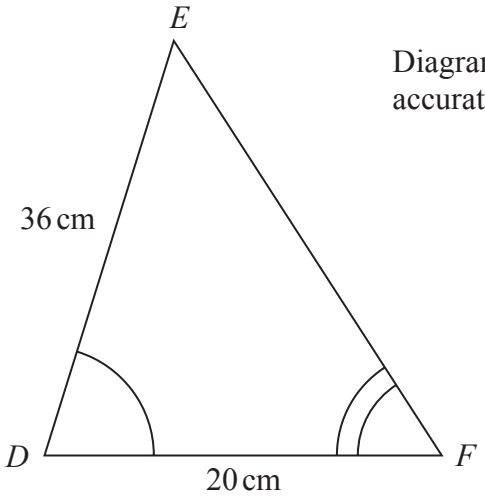


Diagram **NOT** accurately drawn

(a) Work out the length of *AB*.

..... cm

(2)

Given that *BC* = 54 cm,

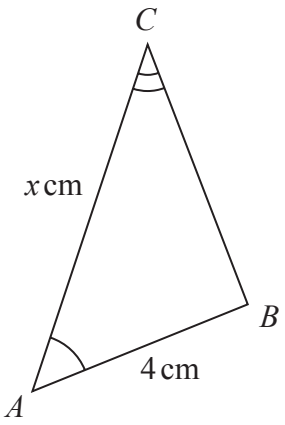
(b) work out the length of *EF*.

..... cm

(2)

(Total for Question 3 is 4 marks)

4



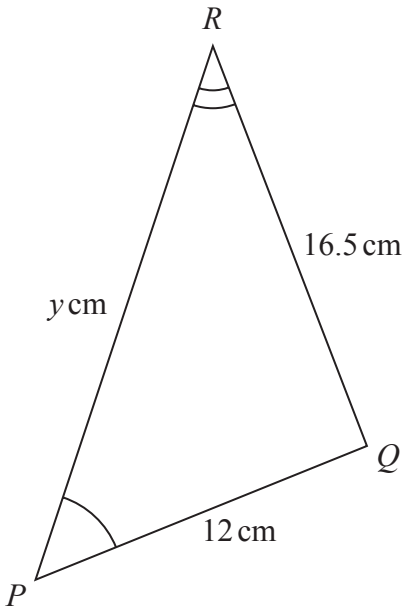


Diagram **NOT** accurately drawn

Triangle ABC is similar to triangle PQR

$AB = 4$ cm $\quad PQ = 12$ cm $\quad RQ = 16.5$ cm $\quad AC = x$ cm $\quad PR = y$ cm

(a) Calculate the length of BC

..... cm

(2)

(b) Write down an expression for y in terms of x

$y =$ .....

(1)

(Total for Question 4 is 3 marks)

5 *ABC* and *DEF* are similar triangles.

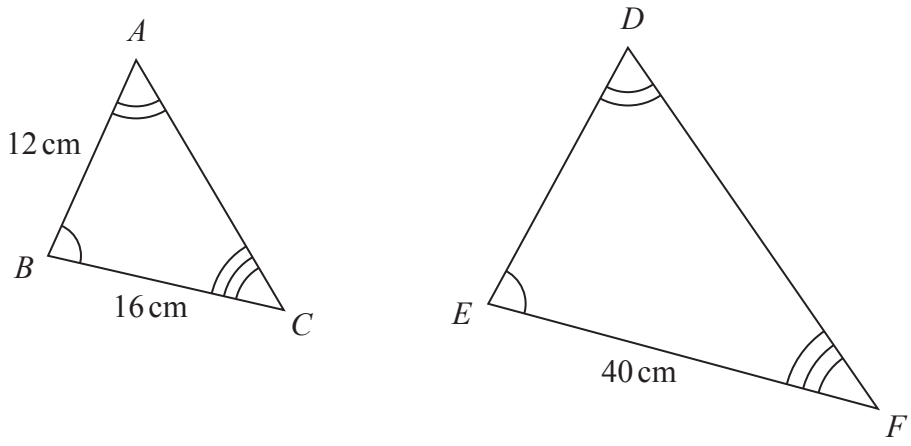


Diagram **NOT** accurately drawn

(a) Work out the length of *DE*.

..... cm

(2)

The area of triangle *DEF* is 525 cm^2

(b) Find the area of triangle *DEF* in m^2

..... m^2

(2)

(Total for Question 5 is 4 marks)

6

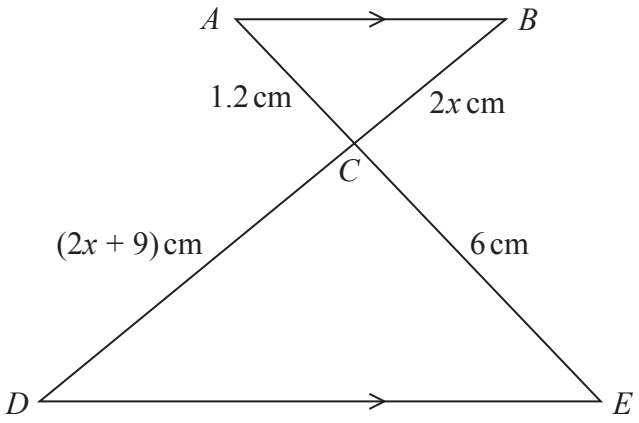


Diagram **NOT** accurately drawn

ACE and *BCD* are straight lines.
AB is parallel to *DE*

Work out the value of x

$x =$ .....

(Total for Question 6 is 3 marks)

7 The circumference of circle **B** is 90% of the circumference of circle **A**.

(a) Find the ratio of the area of circle **A** to the area of circle **B**.

.....

(2)

Square **E** has sides of length e cm.
Square **F** has sides of length f cm.

The area of square **E** is 44% greater than the area of square **F**.

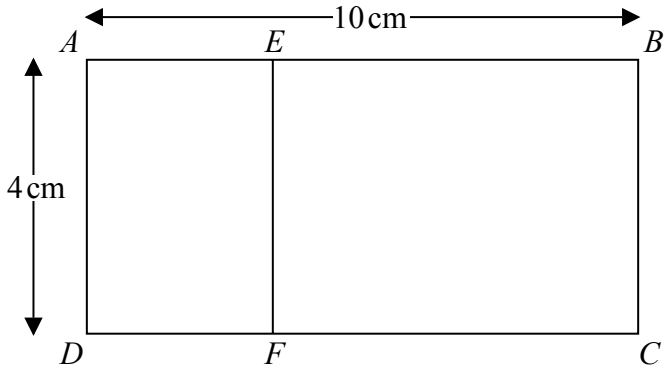
(b) Work out the ratio $e : f$

.....

(2)

(Total for Question 7 is 4 marks)

8 Rectangle *ABCD* is mathematically similar to rectangle *DAEF*.



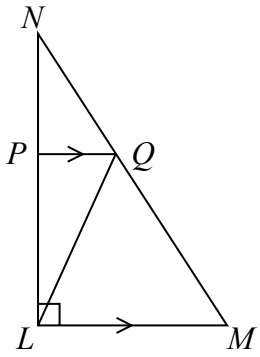
AB = 10 cm.
AD = 4 cm.

Work out the area of rectangle *DAEF*.

..... cm^2

(Total for Question 8 is 3 marks)

9 LMN is a right-angled triangle.



Angle $NLM = 90°$
PQ is parallel to LM.

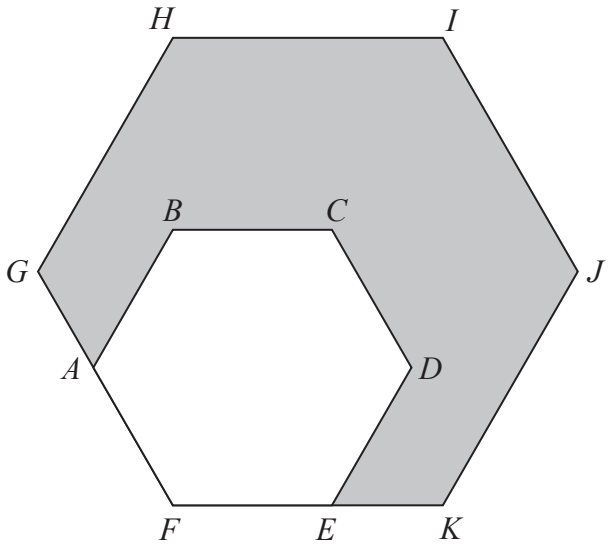
The area of triangle PNQ is 8 cm^2
The area of triangle LPQ is 16 cm^2

Work out the area of triangle LQM.

..... cm^2

(Total for Question 9 is 4 marks)

10

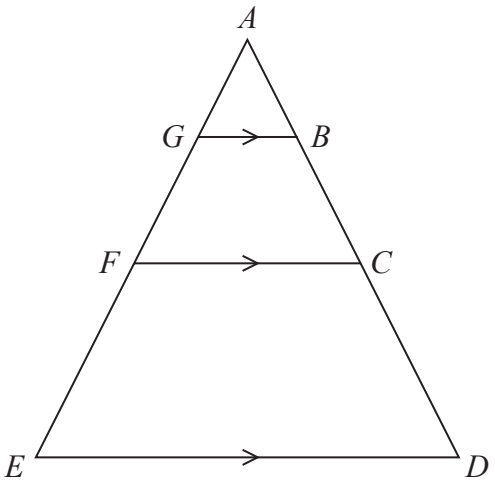


ABCDEF is a regular hexagon with sides of length x.
This hexagon is enlarged, centre F, by scale factor p to give hexagon *FGHIJK*.

Show that the area of the shaded region in the diagram is given by $\frac{3\sqrt{3}}{2}(p^2 - 1)x^2$

(Total for Question 10 is 4 marks)

11 Here are three similar triangles, *ABG*, *ACF* and *ADE*.



ABCD and *AGFE* are straight lines.

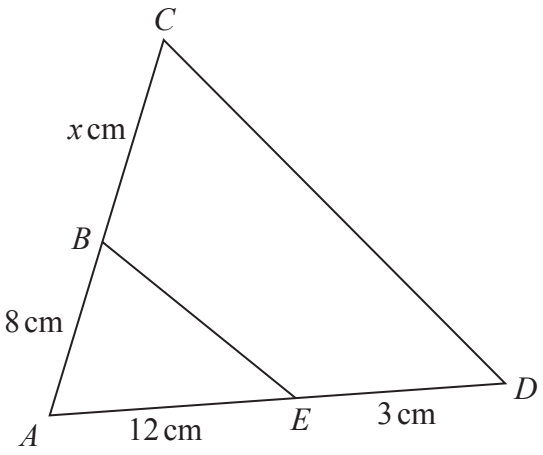
$AB : BC : CD = 1 : 2 : 3$

Show that

area of ABG : area of $BCFG$: area of $CDEF = 1 : 8 : 27$

(Total for Question 11 is 3 marks)

12 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 12 is 5 marks)