

1.3 Homework

GCSE Mathematics
Ratio and Similarity

Marks Available : 20

Question 1

What is the **length scale factor** of the enlargement that generates a line of length 12 cm from one of length 16 cm ?

[1 mark]

Question 2

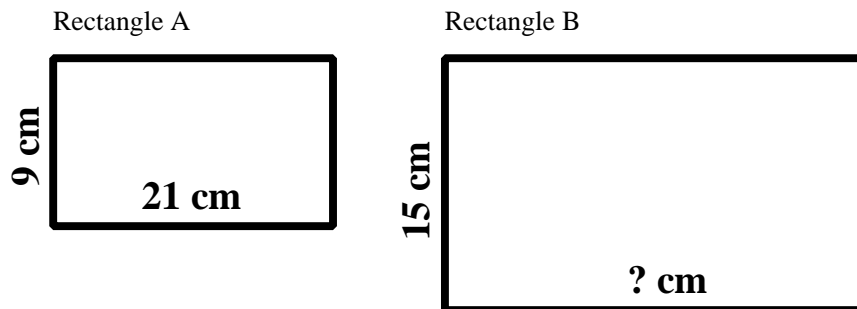
Two lines have lengths in the ratio of 3 : 8.
The shorter line is of length 15cm.
What is the length of the longer line ?

[1 mark]

Question 3

Two shapes are *similar* if they are of the same *shape* although not necessarily the same *size*.

Two similar rectangles, *A* and *B*, are shown below.



(i) What is the **length scale factor** of the similarity, *B* from *A* ?

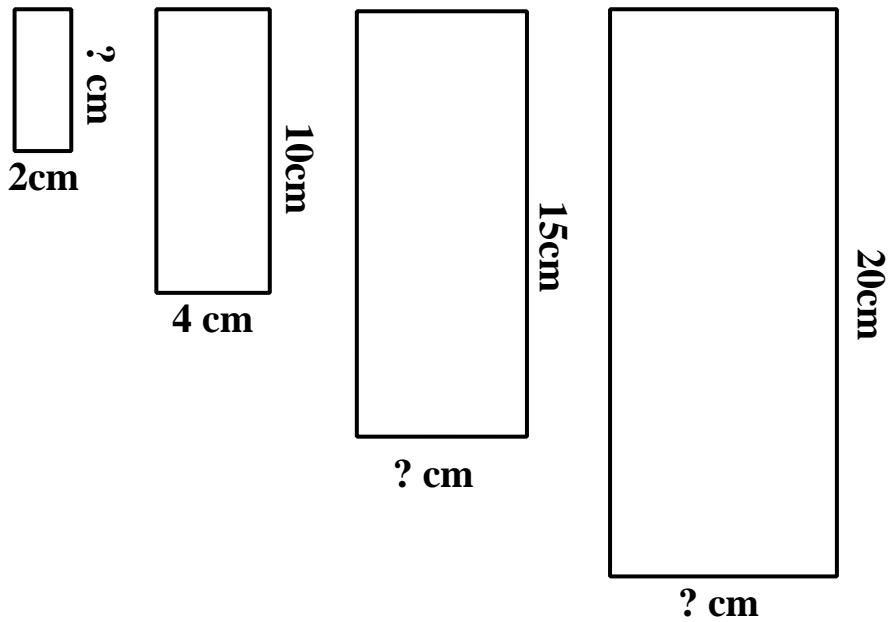
[1 mark]

(ii) What is the length of the side marked with a question mark ?

[1 mark]

Question 4

The four rectangles shown below are all similar to each other.
Find the lengths marked with a question mark.



[3 marks]

Question 5

Two rectangles are similar with length scale factor $\frac{11}{2}$.
The smaller rectangle measures 10 cm by 6 cm.
What are the measurements of the larger rectangle ?

[2 marks]

Question 6

A larger rectangle is $\frac{9}{7}$ times bigger than a smaller, similar rectangle.
The smaller rectangle measures 21 cm by 28 cm.
What are the measurements of the larger rectangle ?

[2 marks]

Question 7

An Investigation

Complete the following table without the use of any decimal fractions.

lsf = length scale factor.

asf = area scale factor.

Rectangle A length \times breadth	Rectangle B length \times breadth	Area A	Area B	lsf B from A	asf B from A
4×8	6×12				
3×9	4×12				
10×20	15×30				
20×20	50×50				
8×4	10×5				
6×9	8×12				

There is an important connection between an **area scale factor** and the **length scale factor** for the same pair of similar shapes.

Can you guess what this might be ?

[9 marks]

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Teachers may obtain detailed worked solutions to the exercises by email from mhh@shrewsbury.org.uk