1.3 Homework

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.
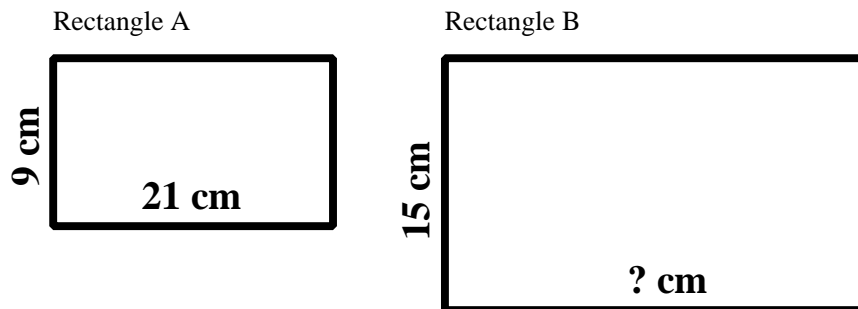The shorter line is of length 15cm.
What is the length of the longer line ?

[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.

Rectangle A   Rectangle B

9 cm   **21 cm**

15 cm   **? cm**

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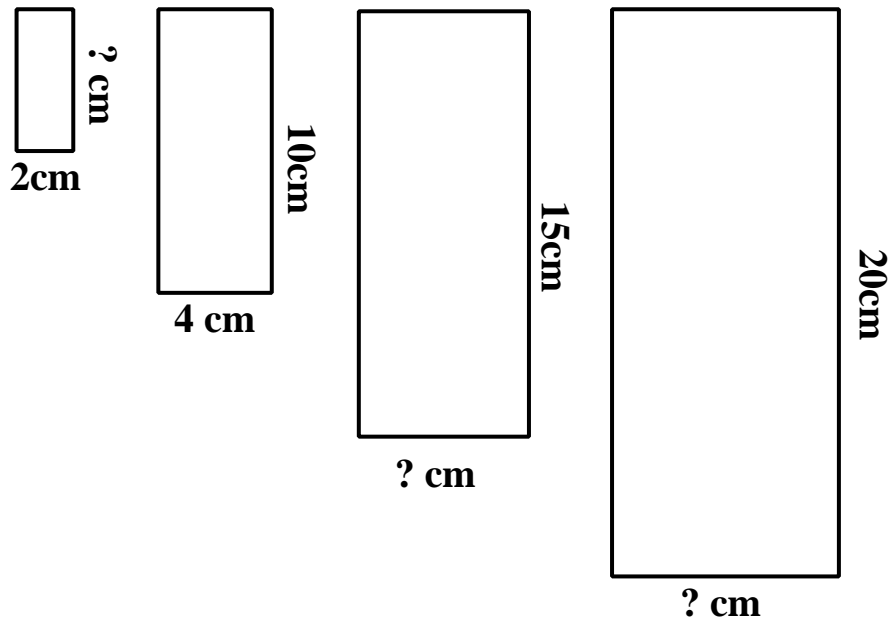
[1 mark]

(**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 × breadth	Rectangle *B* length × breadth	Area *A*	Area *B*	*lsf* *B* from *A*	*asf* *B* from *A*
4 × 8	6 × 12	32	72	$\frac{3}{2}$	$\frac{9}{4}$
3 × 9	4 × 12	27	48	$\frac{4}{3}$	$\frac{16}{9}$
10 × 20	15 × 30	200	450	$\frac{3}{2}$	$\frac{9}{4}$
20 × 20	50 × 50	400	2500	$\frac{5}{2}$	$\frac{25}{4}$
8 × 4	10 × 5	32	50	$\frac{5}{4}$	$\frac{25}{16}$
6 × 9	8 × 12	54	96	$\frac{4}{3}$	$\frac{16}{9}$

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]