

Revision Topic 3: Similar Shapes

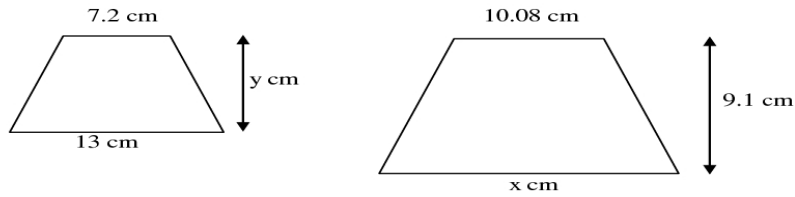
Key Points to Remember:

- * Shapes are **similar** if one shape is an **enlargement** of the other.
- * When two shapes are similar, the **corresponding sides are in proportion** and **corresponding angles are equal**.
- * The scale factor of enlargement is the ratio:

$$\frac{\text{length of a side on second shape}}{\text{length of corresponding side on first shape}}$$

Example 1: Simple example

The two trapezia below are similar. Find the values of x and y.



The first step is to find the scale factor of the enlargement. This can be found by dividing the length of two corresponding sides. We can use the length of the two top sides to find the scale factor here.

$$\text{So, s.f.} = \frac{10.08}{7.2} = 1.4.$$

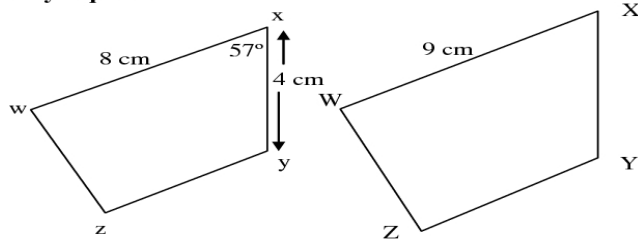
The missing sides can be found by either **multiplying or dividing by the scale factor**.

To find x: **Multiply** 13 cm (the corresponding length on the first shape) by 1.4,
 i.e. $x = 13 \times 1.4 = 18.2$ cm.

[You check that this answer is reasonable – as x is on the larger shape, x must be bigger than 13 cm]

To find y: **Divide** 9.1 cm (the corresponding length on the second shape) by 1.4,
 i.e. $y = 9.1 \div 1.4 = 6.5$ cm.

Examination-style question:



The two shapes (wxyz and WXYZ) are mathematically similar.

- a) Calculate the length of XY.
- b) Find the size of angle YXW (marked θ on the diagram)