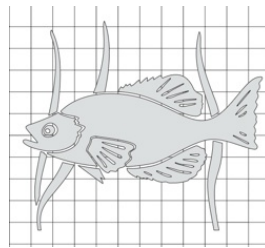




Scale Diagrams:



A diagram that is an enlargement or reduction of another diagram.

The measurements in each diagram are compared.

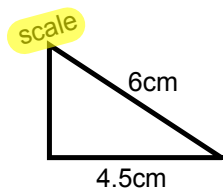
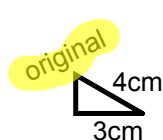

$$\text{Scale Factor} = \frac{\text{Length of Scale Diagram}}{\text{Length of Original Diagram}}$$


The **scale factor** can be written as a fraction or decimal.

If the **scale factor** is less than one, the diagram is a reduction,

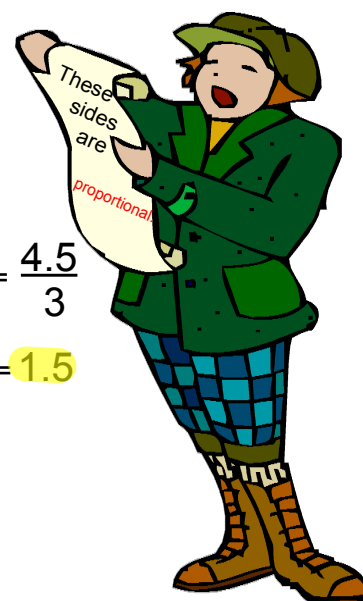
larger than one indicates the diagram is an enlargement.

When pairs of corresponding lengths have the same scale factor,  
we say that the  
corresponding lengths are **proportional**.



$$\frac{\text{scale}}{\text{original}} = \frac{6}{4}$$
$$= 1.5$$

$$\frac{\text{scale}}{\text{original}} = \frac{4.5}{3}$$
$$= 1.5$$





original



scale

Determine the scale factor.

$$\text{Scale Factor} = \frac{\text{Scale Diagram}}{\text{Original Diagram}}$$

$$S.F. = \frac{2.7}{3.7}$$

$$= 0.73$$

$$S.F. = \frac{3.8}{5.2}$$

$$= 0.73$$



This photo of longhouses has dimensions 9 cm by 6 cm.

The photo is to be enlarged by a scale factor of  $\frac{7}{2}$ .

Calculate the dimensions of the enlargement.



original



scale

$$S.F. = \frac{S}{O}$$

$$\boxed{\frac{7}{2} = \frac{S}{9}}$$

$$\frac{7}{2} \swarrow \frac{S}{6}$$

$$9 \left( \frac{7}{2} \right) = S$$

$$\frac{63}{2} = S$$

$$31.5 \text{ cm}$$

$$S = \frac{7(9)}{2}$$

$$= 21 \text{ cm}$$

The new dimensions  
are 31.5 cm X 21 cm

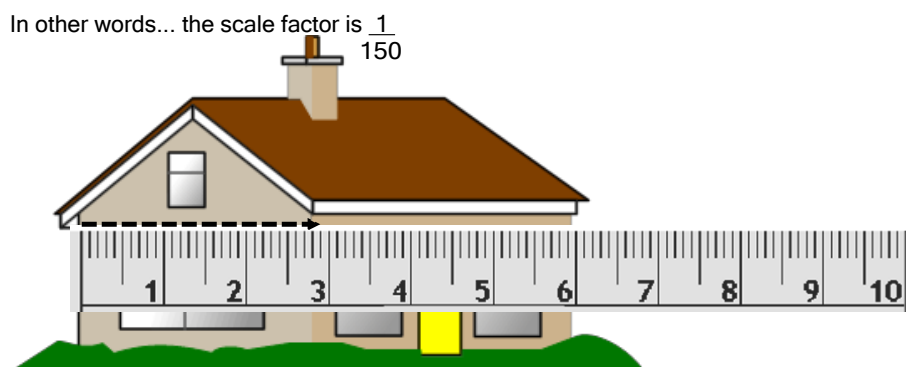
Sometimes you are only given the scale diagram....

A scale may be given as a ratio.

The scale on this scale diagram of a house is 1:150.

This means that 1cm on the diagram represents 150 cm or 1.5m on the house.

How wide is the actual house??



2.8 cm

S.F. =  $\frac{1}{150}$

$$\frac{I_r = 2.8}{150} \therefore \frac{1}{150} = \frac{2.8}{x}$$

$$x \left( \frac{1}{150} \right) = \left( \frac{2.8}{x} \right) (x)$$

$$\frac{x}{150} = 2.8$$

$$x = 2.8(150)$$

$$= 420 \text{ cm}$$

$$= 4.2 \text{ m}$$

Draw the scale diagram with scale of 2.

