

Enlargements & Reductions.

Friday, December 13, 2019 13:47 PM

Proportion \rightarrow equation with 2 equal factors

$$\frac{1}{2} = \frac{5}{10}$$

$$\frac{3}{x} = \frac{12}{20}$$

$\div 4$

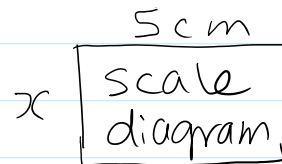
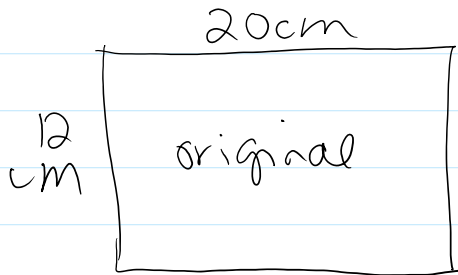
$$x = \frac{20}{4} = 5$$

OR

$$\frac{3}{x} = \frac{12}{20}$$

$$x = \frac{3 \times 20}{12}$$

$$= \frac{60}{12} = 5$$



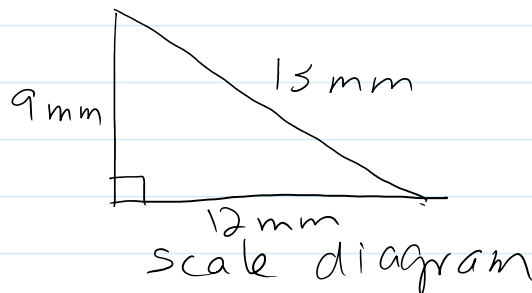
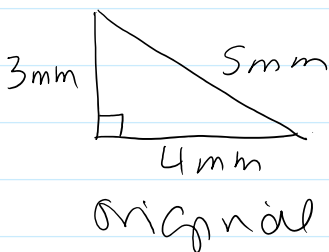
$$\frac{20}{12} = \frac{5}{x}$$

$\div 4$

$$x = \frac{12}{4} = 3$$

A scale diagram is proportional to the original which means all sides are the same factor bigger or smaller

Enlargements



Scale diagram has a scale factor of 3 whichs all sides are 3x larger.

$$\text{length original} \times \text{scale factor} = \text{length}$$

of scale diagram

Original rectangle measures 9cm by 12cm
Your enlargement has a scale factor of 5.
What are the new dimensions?

$$9 \times 5 = 45 \quad 12 \times 5 = 60$$

New dimensions are 45cm by 60cm.

The scale factor was $\frac{1}{3}$.

$$\text{New dimensions } 9 \times \frac{1}{3} = 3 \quad 12 \times \frac{1}{3} = 4$$

3cm by 4cm

Since this is smaller than the original
its called a reduction.

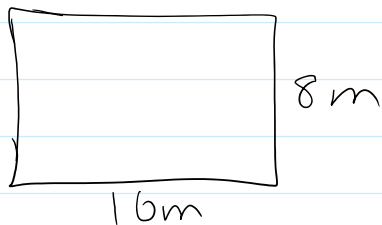
For enlargements: scale factor > 1

For reductions: scale factor between
0 and 1 (proper fraction)

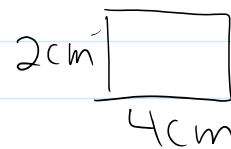
Scale factor is a number.

Scale is a ratio diagram : real life.
(original)

Original



Scale diagram



Scale 2cm to 8m

diagram original 2 : 800 reduce to 1 : 400

small : big \rightarrow reduction

big : small \rightarrow enlargement

If scale is 1:400, what is scale factor?
Scale factor is $\frac{1}{400}$

The scale of a map of Dover school grounds is 1:800. The upper field is 80m long. How long would it be on the map?

$$\frac{\text{map}}{\text{real life}} = \frac{1}{800} = \frac{x}{80\text{m}} \quad x = \frac{80 \cdot 1}{800} = \frac{1}{10} \text{ or } .1\text{m}$$

.1m or 10cm

On the map the upper field is 10cm.