Scale Factors

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9:27 AM

Scale factor :- the ratio of a side in 1 figure compared to the corresponding side in the other figure
- usually a single #
- in a ratio, it is compared to 1
ex. 1:500

Ex. #1
- tissue dimensions 9cm x 10 cm
- a company wants to increase the dimensions by 1.7
- What are the new dimensions

length : 10 cm x 1.7 = 17cm

width 9cm x 1.7 = 15.3cm

Scale factors are also used on maps to represent a certain actual distance on the ground ex. 1cm represents 5km

Ex. #2 The scale on a map shows that 1cm on the map represents an actual distance of 2.5km

(a.) On the map Waltham street has a length of 14cm
? actual length?

14cm x 2.5 = 35km

(b.) Central Street has an actual length of 25km.
? length on map?

25km ÷ 2.5 = 10cm

Calculating Scale Factor (1 : x)

Ex. #3 - On a scale drawing, the height of a stair-step is 0.5 cm
- Actual height of the stair step is 20 cm
? Scale factor ?

$\frac{\text{drawing}}{\text{actual}} \Rightarrow \frac{0.5\text{ cm}}{20\text{ cm}} = \frac{1}{x}$

make sure its the same units !!

$\frac{0.5x}{0.5} = \frac{20}{0.5}$

$x = 40$

1 : 40

Ex. #4 - Diagram of a bedroom, the longest wall is 8.5 in.
- Actual measure is 12.7 ft.
? scale factor ?

RECALL:

1 ft = 12 in

$12.7\text{ ft} \times \frac{12\text{ in.}}{1\text{ ft}} = 153\text{ in.}$

$\frac{\text{drawing}}{\text{actual}} = \frac{8.5\text{ in}}{153\text{ in}} = \frac{1}{x}$

$\frac{8.5x}{8.5} = \frac{153}{8.5}$

$x = 18$

1 : 18