

❖ The SCALE FACTOR is the number by which a corresponding side of a polygon is MULTIPLIED, to form a new polygon

SCALE FACTOR can be shown in several ways

Ratio	3:2 or 1.5:1 or $\frac{3}{2}$
Percent	150%
Decimal	1.5

ALL OF THE SCALE FACTORS TO LEFT ARE ENLARGEMENTS

NOTE: The polygons must first be SIMILAR

❖ *BluePrint* Activity on pp. 110-111 | **FP**

A) L = 10 cm W = 8.3 cm	800 cm 664 cm	Ratio 10:800 or 1:80 8.3:664 or 1:80
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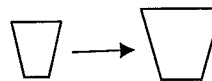
B) - accuracy of proportions
 - don't want mistakes when building

C) 80

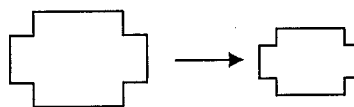
D) replica

E) width is 4.8 cm on drawing so actual width is $4.8 \times 80 = 384$ cm

Any scale factor greater than 1 is an ENLARGEMENT

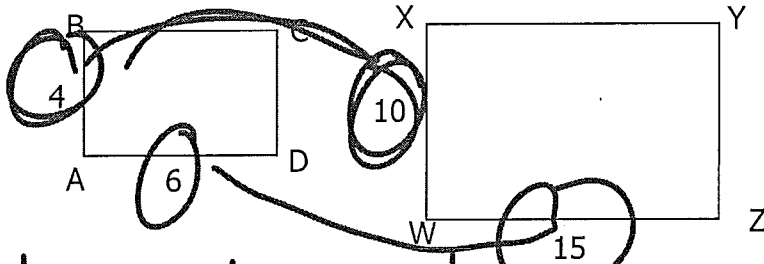


Any scale factor less than 1 is a REDUCTION



❖ ENLARGEMENTS

The second rectangle is an ENLAREMENT of the first one. Determine the SCALE FACTOR of the following enlargement



$$\frac{\text{new}}{\text{original}} = \frac{10}{4} = \frac{5}{2}$$

check

$$\frac{15}{6} = \frac{5}{2}$$

Enlargement: original

$$XW : BA$$

$$\rightarrow 10 : 4$$

$$5 : 2$$

$$2.5 : 1$$

$$WZ : AD$$

$$15 : 6$$

$$5 : 2$$

$$2.5 : 1$$

scale factor

is a) decimal = 2.5

b) % = 250%

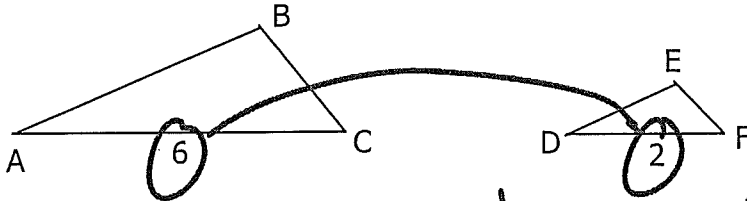
c) fraction = $\frac{5}{2}$

$\frac{\text{enlargement}}{\text{original}}$

$$= \frac{10}{4} = \frac{5}{2}$$

❖ REDUCTIONS

Determine the scale factor of this REDUCTION



Reduction : Original

$$DF : AC$$

$$2 : 6$$

$$1 : 3$$

scale factor

a) decimal = $0.\overline{33}$

b) % = $33.\overline{3}\%$ \rightarrow mult. decimal by 100

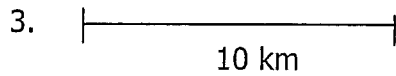
c) fraction = $\frac{1}{3}$

\hookrightarrow may be easiest to look @ fraction 1st by comparing $\frac{\text{new side}}{\text{original side}}$

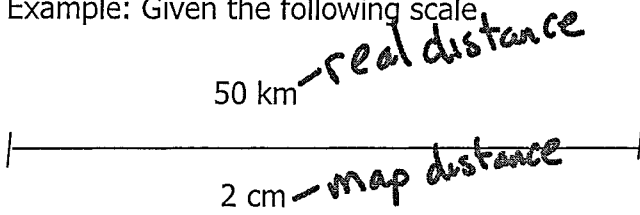
❖ MAPS ARE A GOOD EXAMPLE OF USING SCALE FACTOR

1. 1 CM = 20 KM

2. 1: 20 000



Example: Given the following scale



50 km of real distance corresponds to
2 cm on the map

What is the ACTUAL DISTANCE for a map distance of 7 cm.

Scale Factor

a) 2 cm = 50 km

1 cm = 25 km

if 1 cm = 25 km

1:25 → this is incorrect b/c units are different

1^{cm}: 25 km

1: 25 × 1000 × 100

1: 2,500,000 (these are both in cm's)

1 cm = 25 km
1 cm × 7 = 25 km × 7
7 cm = 175 km

OR $\frac{\text{map}}{\text{real}} \rightarrow \frac{1 \text{ cm}}{25 \text{ km}} \times \frac{7 \text{ cm}}{x \text{ km}}$ (cross multiply)

x = 7 × 25

x = 175 km

HW - pg 114 # 3a, 4, 5, 8, 9, 10, 11a, c, 12