

SEPT 24/09

# SCALE FACTOR

ENLARGEMENT - SCALED UP

SCALE DIAGRAMS OF VERY SMALL OBJECTS (EG. MICROSCOPE)

RATIO 10:1

WORDS: 1 CM REPRESENTS 1 MM


PICTURE 

REDUCTION - SCALED DOWN

SCALE DIAGRAMS OF LARGE  
AREAS (EG. MAP OF CANADA)

RATIO 1:10

WORDS: 1 cm REPRESENTS 10 cm

PICTURE: 

$$SF_L = \frac{\text{2nd LENGTH}}{\text{1st LENGTH}}$$

$$\frac{6m}{\quad}$$

ENLARGEMENT

$$\frac{60m}{\quad}$$

$$SF_L = \frac{60}{6} = 10$$

45 Km

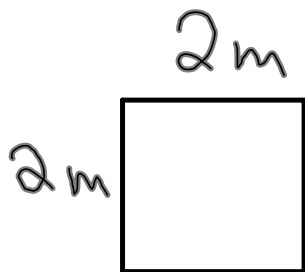
---

15 Km      REDUCTION

---

$$SF_L = \frac{15}{45} = \frac{1}{3}$$

PERIMETER



8m



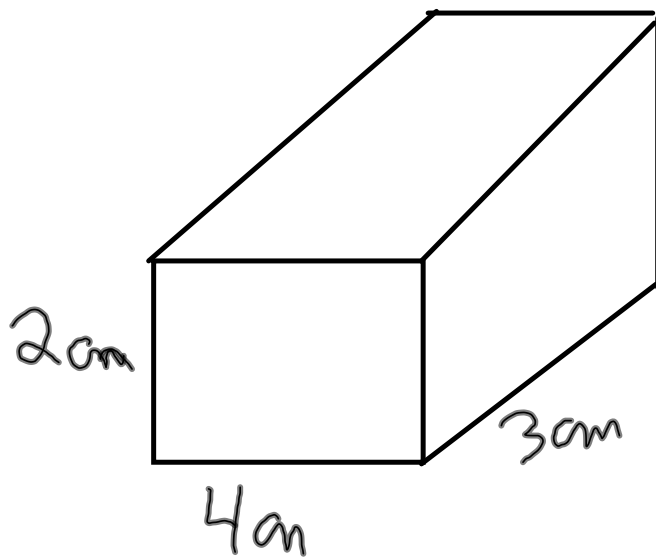
$$P = 8m$$

$$P = 32m$$

$$SF_L = \frac{32}{8} = 4$$

$$P_{ACTUAL} = P_{SCALE} \times SF_L$$

# VOLUME



SCALE 1:3  
 $SF_L = 3$

$$V = l \times w \times h$$

$$V = 3 \times 4 \times 2$$

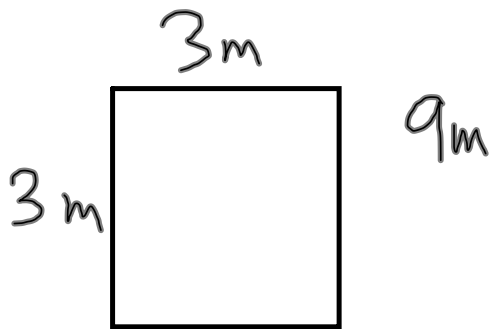
$$V = 24 \text{ cm}^3$$

$$V_{\text{ACTUAL}} = V_{\text{SCALE}} \times SF_L^3$$

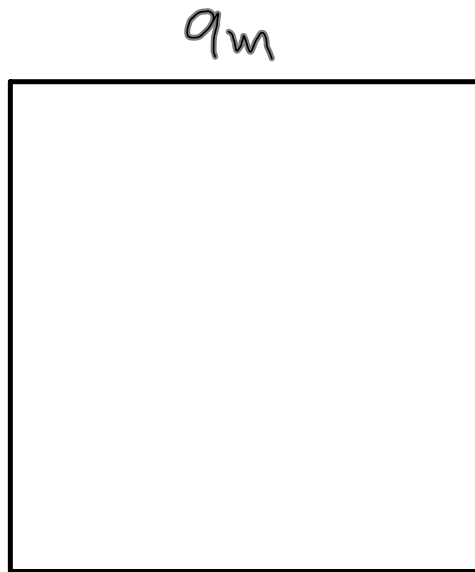
$$V = 24 \times 3^3$$

$$V = 648 \text{ cm}^3$$

AREA



$$A = 9\text{m}^2$$



$$A = 81\text{m}^2$$

$$SF_A = \frac{81}{9} = 9$$

$$\sqrt{SF_A} = SF_L \quad \sqrt{9} = 3 \leftarrow SF_L$$

$$A_{\text{ACTUAL}} = A_{\text{SCALE}} \times SF_A$$

$$A_{\text{ACTUAL}} = A_{\text{SCALE}} \times SF_L^2$$