SOLUTIONS => CHAPTER 7 CHAPTER TEST

Multiple Choice

1. Mass of 65 Kg => 12 ml of antibiotic medicine.
   Mass of 40 Kg => P ml of antibiotic medicine.

$$\frac{P}{40\,Kg} = \frac{12\,ml}{65\,Kg} \Rightarrow \text{Option "C"}$$

2. Triangle ABC => Length = 5.00cm, Height = 3.00cm, Area = 7.5 cm^2 K = 150% or 1.50

Enlargement => Length = (5.00cm)(1.50)
= 7.50cm

Height = (3.00cm)(1.50)
= 4.50cm

$$\text{Area} = \frac{(7.50\text{cm})(4.50\text{cm})}{2}$$
$$= 16.9\ cm^2$$

Option "A"

3. Bat ⇒ 62.5 Km in 2.5 h
Elephant ⇒ 10.0 Km in 15 mins. (0.25 h)

BAT ELEPHANT

$\frac{62.5\text{ Km}}{2.5\text{ h}}$ $\frac{10.0\text{ Km}}{0.25\text{ h}}$ Option "A"

$= 25\text{ Km/h}$ $= 40\text{ Km/h}$

Numerical Response

4. 3h 20 min to fill 5100 L tank.
Time to fill 6200 L tank = ?

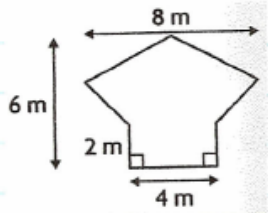
$3\text{h } 20\text{min} = 3(60\text{min}) + 20\text{min}$
$= 180\text{min} + 20\text{min}$
$= 200\text{min}$

$$\frac{200\text{min}}{5100\text{L}} = \frac{x}{6200\text{L}}$$

$$\frac{(200\text{min})(6200\text{L})}{5100\text{L}} = \frac{(5100\text{L})(x)}{5100\text{L}}$$

$$243\text{ min} = x$$

5. Original Diagram



Scale 1m : 200m

$\Downarrow$

$K = \frac{1}{200}$

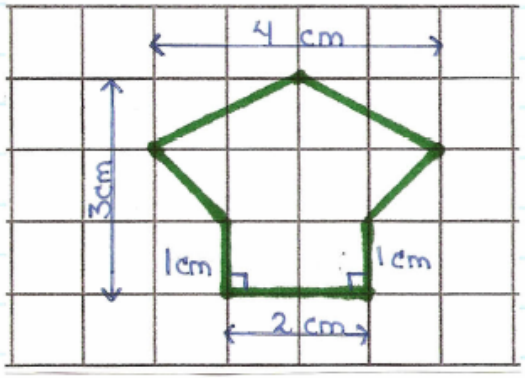
Dimensions of Scale Diagram:

$8m\left(\frac{1}{200}\right) = 0.04m \Rightarrow 4cm$

$6m\left(\frac{1}{200}\right) = 0.03m \Rightarrow 3cm$

$2m\left(\frac{1}{200}\right) = 0.01m \Rightarrow 1cm$

$4m\left(\frac{1}{200}\right) = 0.02m \Rightarrow 2cm$



6. Small Container Large Container

10 cm long by 4 cm high. 13 cm long by 5.2 cm high.

$$K(\text{height}) = \frac{5.2\text{ cm}}{4\text{ cm}}$$

$$= 1.3$$

The heights of the two containers differ by a scale factor of 1.3.

7. A right hexagonal prism is enlarged by a scale factor of 5.7.

a) $\frac{\text{Volume of large prism}}{\text{Volume of small prism}} = k^3$

$= (5.7)^3$

$= 185.193$

b) $\frac{\text{Surface area of large prism}}{\text{Surface area of small prism}} = k^2$

$= (5.7)^2$

$= 32.49$

8. Scale Model of Tractor 0.3ft tall, 0.2ft wide, 0.5ft long

Actual Tractor (K=30)

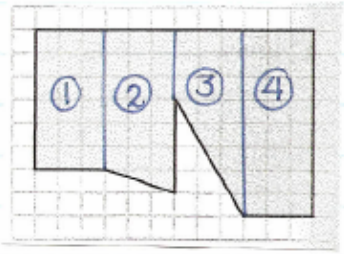
0.3 ft (30) = 9 ft tall
0.2 ft (30) = 6 ft wide
0.5 ft (30) = 15 ft long

9. Scale Model of Statue 13.5 cm, 11.2 cm, 14.6 cm
tall wide long

Actual Statue (k=15)

13.5 cm (15) = 202.5 cm tall
11.2 cm (15) = 168 cm wide
14.6 cm (15) = 219 cm long

10. ① Area of rectangle $= lw$
$= (6)(3)$
$= 18 \text{ unit}^2$



② Area of trapezoid $= \frac{h(a+b)}{2}$
$= \frac{3(6+7)}{2}$
$= \frac{3(13)}{2}$
$= \frac{39}{2}$
$= 19.5 \text{ units}^2$

③ Area of trapezoid $= \frac{h(a+b)}{2}$
$= \frac{3(3+8)}{2}$
$= \frac{3(11)}{2}$
$= \frac{33}{2}$
$= 16.5 \text{ units}^2$

④ Area of rectangle $= lw$
$= (8)(3)$
$= 24 \text{ units}^2$

Total Area $= 18 + 19.5 + 16.5 + 24$
$= 78 \text{ units}^2$

Area of Similar 2-D shape $= K^2$(Area of original shape)
$= \left(\frac{1}{3}\right)^2 (78 \text{ units}^2)$
$= \left(\frac{1}{9}\right)(78 \text{ units}^2)$
$= 8.7 \text{ units}^2$ OR 9 units^2

The area of Esther's reduced figure is 9 units^2.

11. Joan works 30 h every 2 weeks.
She works 50 weeks each year.

Strategy #1

$\frac{30\text{ h}}{2\text{ weeks}} = \frac{x}{1\text{ week}}$

$(30\text{h})(1\text{ week}) = (x)(2\text{ weeks})$

$\frac{2\text{ weeks}}{2\text{ weeks}}$

$15\text{ h} = x$

$\frac{15\text{ h}}{1\text{ week}} \times \frac{50\text{ weeks}}{1\text{ year}} = 750\text{ h/year}.$

Strategy #2

$\frac{30\text{h}}{2\text{ weeks}} = \frac{x}{50\text{ weeks}}$

$(30\text{h})(50\text{ weeks}) = (x)(2\text{ weeks})$

$\frac{2\text{ weeks}}{2\text{ weeks}}$

$750\text{ h} = x$

Joan will work 750h in one year.

12. Cost to fill up at a gas station in Canada:

$$\left(\frac{\$1.39}{1\,L}\right)(90\,L) = \$125.10 \text{ Cdn.}$$

Converting 90 L into U.S gallons:

$$(90\,L)\left(\frac{1\text{ gal}}{3.79\,L}\right) = 23.75 \text{ gal}$$

The cost in U.S. dollars for 23.75 gal:

$$(23.75\text{ gal})\left(\frac{\$3.23}{1\text{ gal}}\right) = \$76.71$$

The cost in Canadian dollars for 23.75 gal:

$$(\$76.71\text{ U.S.})\left(\frac{\$1.04\text{ Cdn}}{\$1\text{ U.S.}}\right) = \$79.78 \text{ Cdn.}$$

Difference in cost = $\$125.10 - \$79.78$
$= \$45.32$

Approximate cost to fill up:

In Canada

$(2\text{k})\left(\frac{\$1.39}{1\text{k}}\right) = \$2.78$

In United States

$(30\text{k})\left(\frac{\$76.71}{90\text{k}}\right) = \$25.57$

$\frac{1}{3}$ of a tank

Which Option makes more sense ???