SOLUTIONS => CHAPTER 7 CHAPTER TEST

Multiple Choice

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

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

2. Triangle ABC => Length = 5.00cm   K = 150%
             Height = 3.00cm   or
             Area = 7.5 cm²   1.50

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

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

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

Option "A"

3. Bat ⟹ 62.5 Km in 0.5h
   Elephant ⟹ 10.0 Km in 15 mins. (0.25 h)

BAT	ELEPHANT

$$\frac{62.5 \text{ Km}}{0.5 \text{ h}} \qquad \frac{10.0 \text{ Km}}{0.25 \text{ h}} \qquad \text{Option "A"}$$

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

Solutions to Chapter 7 Review

Numerical Response

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

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

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

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

$$243\ min = x$$

5. Original Diagram   Scale 1m : 200m

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

8 m

6 m

2 m

4 m
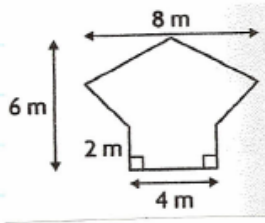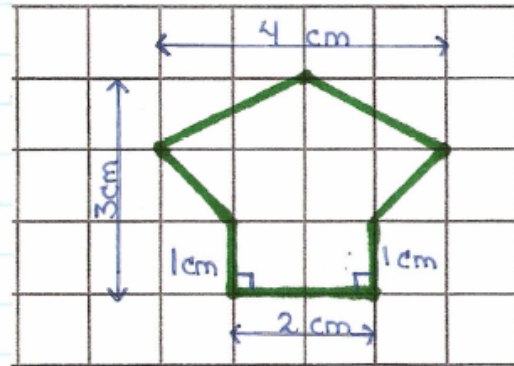
Dimensions of Scale Diagram :

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

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

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

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

4 cm

3cm

1cm   1cm

2 cm

6. Small Container   Large Container

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

k (height) $= \dfrac{5.2\,cm}{4\,cm}$

$\qquad\quad = 1.3$

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) $\dfrac{\text{Volume of large prism}}{\text{Volume of small prism}} = K^3$

$$= (5.7)^3$$
$$= 185.193$$

b) $\dfrac{\text{Surface area of large prism}}{} = K^2$

$$= (5.7)^2$$
$$= 32.49$$

Solutions to Chapter 7 Review

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

Actual Tractor $(K = 30)$

$0.3 \text{ ft} (30) = 9 \text{ ft tall}$
$0.2 \text{ ft} (30) = 6 \text{ ft wide}$
$0.5 \text{ ft} (30) = 15 \text{ ft long}$

Solutions to Chapter 7 Review

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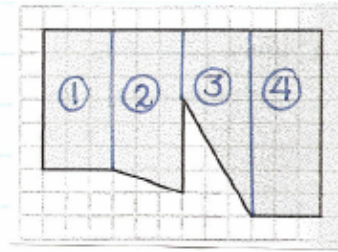   tall   wide   long

Actual Statue ($K=15$)

13.5cm (15) = 202.5cm 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 $= \dfrac{h(a+b)}{2}$
$$= \dfrac{3(6+7)}{2}$$
$$= \dfrac{3(13)}{2}$$
$$= \dfrac{39}{2}$$
$$= 19.5 \text{ units}^2$$

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

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 $= K^2(\text{Area of original shape})$

$= \left(\frac{1}{3}\right)^2(78 \text{ units}^2)$

$= \left(\frac{1}{9}\right)(78 \text{ units}^2)$

$= 8.7 \text{ units}^2$ OR 9 units^2

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

Solutions to Chapter 7 Review

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

Strategy #1

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

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

$$15h = x$$

$$\frac{15h}{1\ week} \times \frac{50\ weeks}{year}$$

$$= 750h/year.$$

Strategy #2

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

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

$$750h = x$$

Joan will work 750h in one year.

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

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

Converting 90 L into U.S gallons:

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

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

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

The cost in Canadian dollars for 23.75 gal:

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

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

Approximate cost to fill up:

In Canada   **In United States**

$(2L)\left(\dfrac{\$1.39}{L}\right) = \$2.78$ $(30L)\left(\dfrac{\$76.71}{90L}\right) = \$25.57$

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

Which Option makes more sense ???