

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.

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

$$\begin{aligned} 2. \text{ Triangle ABC} \Rightarrow \text{length} &= 5.00\text{cm} & k &= 150\% \\ & \text{Height} = 3.00\text{cm} & & \text{or} \\ & \text{Area} = 7.5\text{cm}^2 & & 1.50 \end{aligned}$$

$$\text{Enlargement} \Rightarrow \text{length} = (5.00\text{cm})(1.50) \\ = 7.50\text{cm}$$

$$\text{Height} = (3.00\text{cm})(1.50) \\ = 4.50\text{cm}$$

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

↓
Option "A"

3. Bat \Rightarrow 62.5 Km in 0.5 h

Elephant \Rightarrow 10.0 Km in 15 mins. (0.25 h)

BAT

ELEPHANT

62.5 Km

10.0 Km

Option "A"

0.5 h

0.25 h

= 25 Km/h

= 40 Km/h

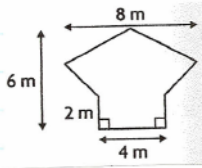
Numerical Response

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

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

$$\begin{aligned} \frac{200\text{min}}{5100\text{L}} &= \frac{x}{6200\text{L}} \\ \frac{(200\text{min})(6200\text{L})}{5100\text{L}} &= \frac{(5100\text{L})(x)}{5100\text{L}} \\ 243\text{min} &= x \end{aligned}$$

5. Original Diagram Scale 1m : 200m



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

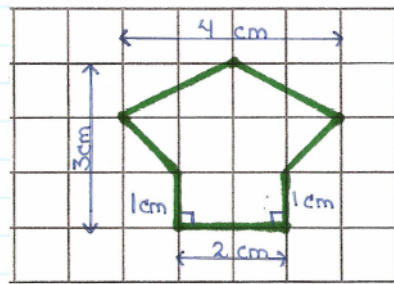
Dimensions of Scale Diagram :

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

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

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

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



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.

$$\begin{aligned} \text{a) } \frac{\text{Volume of large prism}}{\text{Volume of small prism}} &= k^3 \\ &= (5.7)^3 \\ &= 185.193 \end{aligned}$$

$$\begin{aligned} \text{b) } \frac{\text{Surface area of large prism}}{\text{Surface area of small prism}} &= k^2 \\ &= (5.7)^2 \\ &= 32.49 \end{aligned}$$

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

Actual Tractor ($K=30$)

$$0.3 \text{ ft} (30) = 9 \text{ ft tall}$$

$$0.2 \text{ ft} (30) = 6 \text{ ft wide}$$

$$0.5 \text{ ft} (30) = 15 \text{ ft long}$$

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

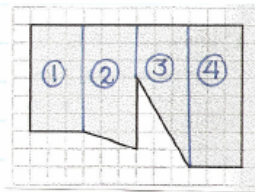
Actual Statue ($k=15$)

$$13.5 \text{ cm} (15) = 202.5 \text{ cm tall}$$

$$11.2 \text{ cm} (15) = 168 \text{ cm wide}$$

$$14.6 \text{ cm} (15) = 219 \text{ cm long}$$

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



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

$$\begin{aligned} \textcircled{4} \text{ Area of rectangle} &= lw & \text{Total Area} &= 18 + 19.5 + 16.5 + 24 \\ &= (8)(3) & &= 78 \text{ units}^2 \\ &= 24 \text{ units}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of similar 2-D shape} &= k^2 (\text{Area of original shape}) \\ &= \left(\frac{1}{3}\right)^2 (78 \text{ units}^2) \\ &= \left(\frac{1}{9}\right) (78 \text{ units}^2) \\ &= 8.7 \text{ units}^2 \text{ OR } 9 \text{ units}^2 \end{aligned}$$

The area of Esther's reduced figure is 9 units².

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

Strategy #1

$$\begin{array}{l} \frac{30h}{2 \text{ weeks}} = \frac{x}{1 \text{ week}} \\ \frac{(30h)(1 \text{ week})}{2 \text{ weeks}} = \frac{(x)(2 \text{ weeks})}{2 \text{ weeks}} \\ 15h = x \end{array} \qquad \begin{array}{l} 15h \times 50 \text{ weeks} \\ \frac{1 \text{ week}}{1 \text{ week}} \text{ year} \\ = 750h/\text{year} \end{array}$$

Strategy #2

$$\begin{array}{l} \frac{30h}{2 \text{ weeks}} = \frac{x}{50 \text{ weeks}} \\ \frac{(30h)(50 \text{ weeks})}{2 \text{ weeks}} = \frac{(x)(2 \text{ weeks})}{2 \text{ weeks}} \\ 750h = x \end{array}$$

Joan will work 750h in one year.

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

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

Converting 90L into U.S. gallons:

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

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:

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

$$\begin{aligned} \text{Difference in cost} &= \$125.10 - \$79.78 \\ &= \$45.32 \end{aligned}$$

Approximate cost to fill up:

In Canada

$$(\cancel{2L}) \left(\frac{\$1.39}{L} \right) = \$2.78$$

In United States

$$(\cancel{30L}) \left(\frac{\$76.71}{90L} \right) = \$25.57$$

↑
 $\frac{1}{3}$ of a tank

Which Option makes more sense ???