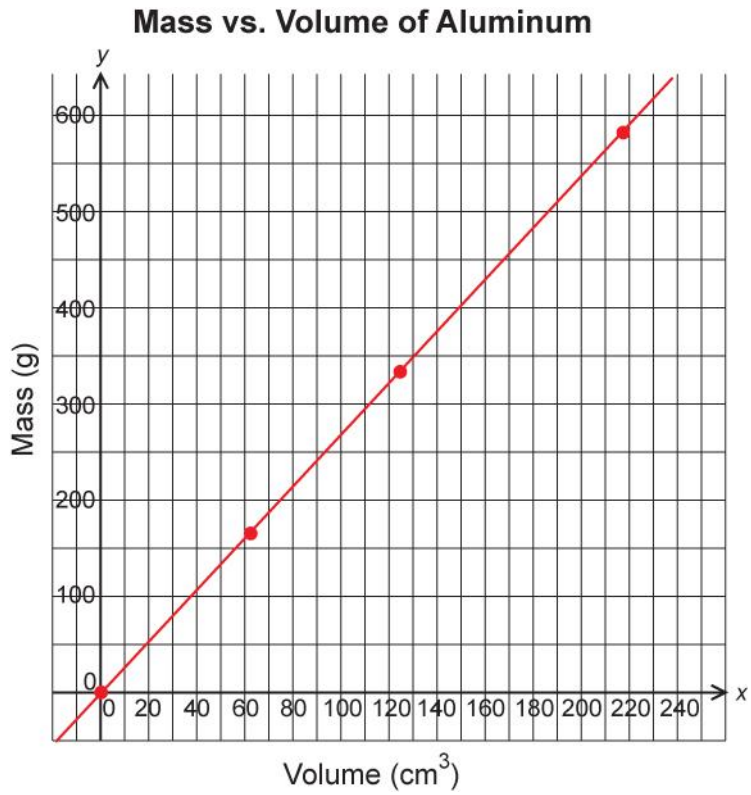
TT 4. Possible Solutions

Foundations and Pre-calculus Mathematics 10 (Pearson), questions 25, 26, and 27 on page 342

25. a) The graph should look like the following.



25. b) $\text{slope} = \dfrac{\Delta y}{\Delta x}$

$= \dfrac{y_2 - y_1}{x_2 - x_1}$

$= \dfrac{337.5\text{ g} - 172.8\text{ g}}{125\text{ cm}^3 - 64\text{ cm}^3}$

$= \dfrac{164.7\text{ g}}{61\text{ cm}^3}$

$= 2.7\text{ g/cm}^3$

25. c) The slope represents the mass of each cm^3 of aluminum.

25. d) To find the mass, you would multiply the volume by the slope.

i) $50\text{ cm}^3 \times \dfrac{2.7\text{ g}}{1\text{ cm}^3} = 135\text{ g}$

ii) $275\ \text{cm}^3 \times \frac{2.7\ \text{g}}{1\ \text{cm}^3} = 742.5\ \text{g}$

25. e) To find the volume, you would divide the mass by the slope.

i) $100\ \text{g} \div \frac{2.7\ \text{g}}{1\ \text{cm}^3} \doteq 37.0\ \text{cm}^3$

ii) $450\ \text{g} \div \frac{2.7\ \text{g}}{1\ \text{cm}^3} \doteq 166.7\ \text{cm}^3$

26. a) There is not a line drawn through the points on the graph, since you cannot have half of a message. You can only have a whole number of text messages.

26. b) $\text{slope} = \frac{3.00}{20} = \$0.15 / \text{message}$

It is the slope of the line.

26. c) $\frac{\$0.15}{\text{message}} \times 33\ \text{messages} = \$4.95$

26. d) $\frac{0.15}{1\ \text{message}} = \frac{7.20}{x\ \text{messages}}$ so, $\frac{7.20}{0.15} = 48\ \text{messages}$

26. e) An assumption is that each message costs the same.

27. a)
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{\$280 - \$145}{5 - 2\ \ \text{month}}$$
$$= \frac{\$135}{3\ \text{months}}$$
$$= \$45/\text{month}$$

27. b) $\$45/\text{month} \times 5\ \text{months} = \$225$

$\$280 + \$225 = \$505$

After 10 months, Charin will have saved \$505.

27. c) If Charin had \$145 after two months and he saved \$45 each month, then he started with
\$145 – \$45 – \$45 = \$55.

27. d. The student may have made the following assumptions:

- Charin continues to save the same amount of money each month after the fifth month.
- No other deposits or withdrawals are made on the account.