

D: Problem Solving with Decimals Continued

Examples:

1. An airplane is cruising at a height of 1000m. It then descends at 10m/min for 20min.

a) What was the plane's height after 20 min?

- multiply 10m/min by 20 min to find the height/distance it travels.

$$= (10\text{m/min})(20\text{min})$$

$$= 200\text{m} \quad \text{descended so its height lowered.}$$

- subtract from its original height.

$$\begin{array}{r} 1000\text{m} \\ - 200\text{m} \\ \hline 800\text{m} \end{array}$$

(above ground)

b) If the plane continues to descend how long will it take to reach the ground?

$$\frac{800\text{m}}{10\text{m/min}}$$

Divide the height needed to travel to the ground by 10m/min.

$$\boxed{= 80\text{min}}$$

It will take an additional 80 min to reach the ground.



2. The temp decreases by 0.35°C for every 175m increase in altitude on a humid day.

a) The temperature is 20°C where you are. What is the temp at an altitude of 2.5km above you?

→ Convert 2.5km to metres ($\times 1000$)

$$= 2.5\text{km} \times 1000$$

$$= 2500\text{m}$$

→ Find the "drop" rate $^{\circ}\text{C}$ per m.

$$\frac{0.35^{\circ}\text{C}}{175\text{m}}$$

$$= 0.002^{\circ}\text{C}/\text{m} \quad \text{Drops } 0.002^{\circ}\text{C} \text{ every metre.}$$

Multiply the distance by the $^{\circ}\text{C}/\text{m}$ rate.

$$= (2500)(0.002)$$

$$= 5^{\circ}\text{C} \quad \text{This is how much the temp drops.}$$

$$\begin{array}{r} 20 \\ - 5 \\ \hline 15^{\circ}\text{C} \end{array}$$

Subtract from original.

b) The temp 1200m above a city is 28°C . What is the temp inside the city?

$$(1200\text{m})(0.002) = 2.4^{\circ}\text{C} \quad \text{Multiply metres by rate change.}$$

* Temp increases as you get closer to the ground.

$$\begin{array}{r} 28^{\circ}\text{C} \\ + 2.4 \\ \hline 30.4^{\circ}\text{C} \end{array}$$

Add the increase to the original temperature.

3. You make a profit of \$750 one month and then lose \$680 the second month and lose \$520 in the third month.

a) What is your average profit or loss per month for three months?

→ Add all values using proper + or - sign.

$$+ 750 \oplus - 680 \oplus - 520 \quad \text{Get rid of double signs.}$$

$$= 750 - 680 - 520 \quad \text{Solve.}$$

$$= -450$$

Divide by the 3 months.

$$\frac{-450}{3}$$

$$= -150/\text{month}$$

There is an average loss of 150 per month.
because its negative.

b) You break even over four months. What is the profit/loss in the fourth month?

Break even means you earn \$0.

-450 over 3 months [what can you add to -450 to make 0?]

$$\underbrace{-450 + 450}_{\text{Month 4}} = \$0$$

There is a profit of \$450 in the 4th month.

Assignment Pg. 60 #13-29 (odd # questions only)

