$$\frac{4-2y}{3} = \frac{3}{4} - \frac{5y}{6}$$

LCD: 12

$3 = 3$

$4 = 2^2$

$6 = 3 \cdot 2$

$\Rightarrow LCD = 2^2 \cdot 3$

$= 12$

* Break down into prime factors

LCD: product of highest power of prime factors

$$\frac{4}{3} \cdot 12 - \frac{2y}{3} \cdot 12 = \frac{3}{4} \cdot 12 - \frac{5y}{6} \cdot 12$$

$$4 \cdot 4 - 2y \cdot 4 = 3 \cdot 3 - 5y \cdot 2$$

$$16 - 8y = 9 - 10y$$

$$-16 \quad +10y \qquad -16 \quad +10y$$

$$2y = -7$$

$$y = -\frac{7}{2}$$

Exercise 3: Under normal conditions, 1.5 feet of snow will melt into 2 inches of water. After a monster snowstorm, there were 3.5 feet of snow. How many inches of water will there be when the snow melts?

1.5 ft snow = 2 in water or $\frac{1.5 \text{ ft snow}}{2 \text{ in water}}$

identity conversion rate.

$$\frac{1.5 \text{ ft snow}}{3.5 \text{ ft snow}} = \frac{2 \text{ in } H_2O}{x}$$

$$(2 \text{ in } H_2O)(3.5 \text{ ft snow}) = 1.5 \text{ ft snow} \cdot x$$

$$\frac{(2 \text{ in } H_2O)(3.5 \text{ ft snow})}{1.5 \text{ ft snow}} = \frac{1.5 \text{ ft snow} \cdot x}{1.5 \text{ ft snow}}$$

$$\frac{(2 \text{ in } H_2O)(3.5)}{(1.5)} = x$$

$$\frac{7 \text{ in } H_2O}{1.5} = x$$

$$4.\overline{6} \text{ in } H_2O = x$$

$$4\tfrac{2}{3} \text{ inches } H_2O = x$$

Exercise 3: Under normal conditions, 1.5 feet of snow will melt into 2 inches of water. After a monster snowstorm, there were 3.5 feet of snow. How many inches of water will there be when the snow melts?

using conversion rate

$$\frac{1.5 \text{ ft snow}}{2 \text{ in } H_2O} = \frac{3.5 \text{ ft snow}}{x}$$

$$(2 \text{ in } H_2O)(3.5 \text{ ft snow}) = x\,(1.5 \text{ ft snow})$$

$$\frac{(2 \text{ in } H_2O)(3.5 \text{ ft snow})}{1.5 \text{ ft snow}} = \frac{x\,(1.5 \text{ ft snow})}{1.5 \text{ ft snow}}$$

$$\frac{(2 \text{ in } H_2O)(3.5)}{1.5} = x$$

$$4.\overline{6} \text{ in } H_2O = x$$

$$\boxed{4\tfrac{2}{3} \text{ in } H_2O = x}$$

$\frac{1.5 \text{ snow}}{3.5 \text{ snow}} = \frac{2 H_2O}{x}$ $\qquad$ $\frac{1.5 \text{ snow}}{2 H_2O} = \frac{3.5 \text{ snow}}{x}$

$x = 4.\overline{6}$ inches H_2O

Recall: 1.5 ft snow $= 2$ in H_2O $\qquad$ or $\qquad \frac{1.5 \text{ ft snow}}{2 \text{ in } H_2O}$

Does our arrangement matter?

$\frac{1.5 \text{ snow}}{3.5 \text{ snow}} = \frac{x}{2 H_2O}$? ← do not do this.

$\frac{1.5}{3.5} = \frac{x}{2H_2O}$

$(1.5)(2H_2O) = 3.5x$

$\frac{(1.5)(2 H_2O)}{(3.5)} = x$

$0.857142 \text{ in } H_2O = x$?

$\frac{6}{7}$ inches $H_2O = x$ ← does this make sense?

No.

→ 1.5ft snow and 2 in H_2O should NOT be diagonal on the proportion.

→ only across equal sign

or one atop the other