

6.3 Combining Percent

1. a) Calculate the final price of a \$750 television that is on sale for 20% off. Include 7% PST and 5% GST.

$$\text{after sale : } 100 - 20 = 80\%$$

$$\text{after tax : } 100 + 7 + 5 = 112\%$$

$$750 \times 0.8 \times 1.12 = 672$$

\therefore The final price is \$672.

- b) Can you combine the percents: 20% - 12% = 8%?

No, I can't.

Because the tax is on the price after the sale.

- c) What percent discount are you receiving with the final price including tax?

$$\frac{750 - 672}{750} \times 100 = 10.4\%$$

$$\% \text{ discount} = \frac{\text{discount}}{\text{original cost}} \times 100$$

\therefore The percent discount is 10.4%.

In general, you can only combine percents when the percents are taken from the same total.

2. A \$150 hockey stick is on sale for 10% off in January. In February it is an additional 20% off.

- a) Find the final price in February.

$$150 \times 0.9 \times 0.8 = 108$$

\therefore The final price is \$108.

- b) Another store offers the same stick for 30% off. Which store has a better deal or are they the same?

$$150 \times 0.7 = 105$$

\therefore The \$105 is better deal.

- c) What single percent discount is equivalent to 'a'?

$$\frac{150 - 108}{150} \times 100 = 28\%$$

\therefore The percent discount is 28%.

3. An item is decreased by 15%. What percent must it be increased to get back to the original price?

Let the original price is \$100.

$$\begin{array}{ccc} & -15\% & \\ \$100 & \xrightarrow{\quad} & \$85 \\ & \xleftarrow{\quad x} & \end{array}$$

$\therefore 18\%$ must be increased.

$$85 \times x = 100$$

$$x = \frac{100}{85} \approx 1.18 = 118\%$$

Assignment: p148 #5, 6, 7a, 9-14