

4 - Understanding Percent

4.4 Combining Percents

Percents can be Combined by adding to solve problems. $5\% + 7\% = 12\%$

To calculate the increase in a number you can

1.combine percent amount to the original number.

$$\begin{array}{r} \$40 \leftarrow 15\% \text{ of } = \end{array}$$

2.multiply the original number by a single percent greater than 100.

$$\$40 \quad 115\% =$$

Percents of Percents can be used to determine amounts that result from consecutive percent increases or decreases.

Example:

There are 800 geese that live in a given water shed. In the first year, their population decreases by 5%. In the second year, their population decreased by 10%. How many geese are left after the second year?

$$\textcircled{1} \quad 5\% \div 1\% \text{ of } 800$$

$$\textcircled{2} \quad 0.05 \times 800 = 40$$

$$\begin{array}{r} \text{Year 2} \\ 800 \text{ geese} \\ - 40 \text{ geese} \\ \hline 760 \text{ geese} \end{array}$$

$$\begin{array}{r} 10\% \text{ of } 760 \\ 0.10 \times 760 \\ \hline = 76 \end{array}$$

After two years there are 684 geese

Example: Suppose GST is 6% and PST is 11%. Calculate the total tax and total cost of a sound system that is priced at \$499.

$$\begin{array}{r} 6\% + 11\% = 17\% \\ 17\% \text{ of } \$499 \\ 0.17 \times 499 \\ \hline = \$84.83 \leftarrow \text{TAX} \\ \$499 + \$84.83 \\ \hline = \$583.83 \end{array}$$

Example: Sport Check offers a 10% discount one day and then an additional 10% off the sale price the next day! Sports Mart offers a 20% discount on one day only. Adam wants to buy a new helmet that has a regular price of \$150.

a) Which store gives the better buy? Explain.

$$\begin{array}{r} \text{Sport Mart} \rightarrow 20\% \text{ of } \$150 \\ 0.20 \times 150 = 30 \\ \$150 - 30 = \$120 \end{array}$$

$$\begin{array}{r} \text{Sport Check} \rightarrow 10\% \text{ of } \$150 \\ 0.10 \times 150 = 15 \\ \$150 - 15 = \$135 \end{array}$$

b) What single percent discount is equivalent to a discount of 10% one day followed by an additional discount of 10% off the sale price the second day?

$$\begin{array}{r} \$150.00 \\ - 121.50 \\ \hline = \$28.50 \end{array}$$

$$\frac{28.50}{150} = \frac{x}{100}$$

$$\frac{2850}{150} = 19\%$$

What is the final sale price at each store? Which is the better buy?

Store A: 50% off one day only

$$50\% \text{ of } \$50 = 25$$

Store B: 25% off one day followed by 20% off the reduced price the second day.

$$\begin{array}{r} \text{DAY 1} \\ 25\% \text{ of } \$50 \\ 0.25 \times 50 = 12.50 \\ \$50 - 12.50 = 37.50 \end{array}$$

$$\begin{array}{r} \$37.50 \\ 20\% \text{ of } 37.50 \\ 0.20 \times 37.50 = 7.50 \\ \$37.50 - 7.50 = \$30.00 \end{array}$$

BETTER BUY