

Name: \_\_\_\_\_

Date: \_\_\_\_\_

<b>Learning Goal 3.2</b>	I can calculate the percent of a number and <b>combine percentages.</b>
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**Example** A new iPod costs \$90. If the GST is 5% and the PST is 7%, what is the final price?

1. Calculate Separately

$$\text{GST: } \frac{5}{100} \times 90 = 0.05 \times 90 = \$4.50$$

$$\text{PST: } \frac{7}{100} \times 90 = 0.07 \times 90 = \$6.30$$

$$\begin{array}{r} 90.00 \\ + 4.50 \\ + 6.30 \\ \hline 100.80 \end{array}$$

2. Combining Percentages

$$\text{Tax: } 5\% + 7\% = 12\% \quad \frac{12}{100} \times 90 = 0.12 \times 90 = 10.8$$

The total cost is \$100.80

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$$\begin{array}{r} 90.00 \\ + 10.80 \\ \hline 100.80 \end{array}$$

3. Combining the Total and the Percentages

$$\text{ipod } \uparrow \quad (100\% + 12\%) = 112\% \quad \uparrow \text{ tax}$$

$$\frac{112}{100} \times 90 = 100.80$$

The total cost is \$100.80

**Example** The PS4 costs \$300. Future Store offers a 15% off discount one day and then an additional 15% off the sale price the following day. Best Deal offers a one day only 30% discount.

a. Which store is a better buy?

1. Calculate Discount, then Sale Price, then Final Price

$$\text{FS: Day 1: } \frac{15}{100} \times 300 = 45 \quad 300 - 45 = \$255$$

$$\text{Day 2: } \frac{15}{100} \times 255 = 38.25 \quad \$255 - 38.25 = \$216.75$$

$$\text{BD: } \frac{30}{100} \times 300 = 90 \quad 300 - 90 = \$210$$

2. Combining Percentages to get the Final Price

$$\text{FS: Day 1: } \frac{85}{100} \times 300 = 255$$

$$\text{Day 2: } \frac{85}{100} \times 255 = \$216.75$$

$$\text{BD: } \frac{70}{100} \times 300 = \$210$$

b. What single percent discount is equivalent to a discount of 15% one day followed by an additional 15% off the sale price the next day?

$$\frac{85}{100} \left( \frac{85}{100} \times 300 \right) \quad \uparrow \text{ original price}$$

Full discount

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$$\begin{array}{r} 85 \times 85 \\ 10000 \\ = 7225 \\ \hline 10000 \\ = 72.25 = 72.25\% \end{array}$$

To calculate the amount of increase or decrease

Increasing by a  $x\%$  we need to account for the original (100%)  
 $\Rightarrow$  use  $(100+x)\%$   
 Decreasing by  $y\%$  we need to take that away from the original  
 $\Rightarrow$  use  $(100-y)\%$

**Example** A population of 100 increases by 20%.

$$\text{original} \left( \frac{100+20}{100} \right) \times 100 = \frac{120}{100} \times 100 = 120 \text{ birds}$$

To calculate the final amount after an increase or decrease

Calculate the percent increase or decrease, then add or subtract the answer from the total.

**Example** A population of 100 increases by 20%.

$$\frac{20}{100} \times 100 = 20$$

$$100 + 20 = 120 \text{ birds.}$$

**Example** A population of 100 decreases by 20%.

$$\frac{20}{100} \times 100 = 20$$

$$100 - 20 = 80 \text{ birds}$$

**Example** Gary sees two DVDs regularly priced at \$25 each that he wants to buy. Future Store is having a 20% off sale on everything in the store. If the GST is 5% and the PST is 7%, what is the final price?

$$\text{Discount: } \frac{20}{100} \times 25 = 5$$

$$25 - 5 = 20 \text{ per DVD}$$

$$\$40 \text{ total}$$

$$\text{Tax: } \frac{12}{100} \times 40 = 4.80$$

$$40 + 4.80 = 44.80$$

Gary spent \$44.80 on 2 DVDs.