Math 8 Name _____

Sec 5.4 Sales Tax and Discount Date _____

1) Finding Discount

Again, we can use cross multiply to find the sale price after a discount.

$$\frac{\text{Percent Discount}}{100} = \frac{\text{Discount (\$)}}{\text{Regular Price}}$$

Example – A backpack costs \$30. It is on sale for 20% off. Find the sale price.

$\frac{x}{30} = \frac{20}{100}$ $100x = 30(20)$ $100x = 600$ $x = \$6$

The discount (\$) is 6. Therefore, the sale price is 24.

Regular Price – Discount (\$) = Sale Price

Your Turn – Calculate the sale price of the following items.

a) \$200 tv with a 8% discount

$\frac{x}{200} = \frac{8}{100}$ $100x = 8(200)$ $100x = 1600$ $x = \$16$ So $200 - 16 = 184$

b) \$40 pants with a 30% discount

$\frac{x}{40} = \frac{30}{100}$ $100x = 30(40)$ $100x = 1200$ So $x = \$12$ and $40 - 12 = 28$

c) At a discount of 25%, bicycles are on sale for \$240. What is the regular price?

So \$240 is 75% of the regular price!

$\frac{240}{x} = \frac{75}{100}$ $75x = 240(100)$ $x = \$320$

d) The sale price of a printer is \$90. If there were a 40% discount, what was the regular price?

So \$90 is 60% of regular price!

$\frac{90}{x} = \frac{60}{100}$ $60x = 90(100)$ $x = \$150$

2) Finding Tax

Again, we can use cross multiply to find the tax to add to an item.

$$\frac{\text{Percent Tax}}{100} = \frac{\text{Tax (\$)}}{\text{Price of item}}$$

Example – A backpack costs $30. Including 5% GST and 7% PST, find the total price.

Option 1:

$\frac{x}{30} = \frac{12}{100}$ $\quad 100x = 12(30)$ $\quad x = 3.6$

Option 2:

$\frac{x}{30} = \frac{112}{100}$ $\quad x = \$33.6$

12% + 100% = 112%

The tax ($) is $\$3.6$. Therefore, the total price is $\$33.6$.

Price of item + Tax ($) = Total Price

Your Turn

a) You go to McDonald's for a $6 breakfast. If you have to pay 5% GST, what is the total cost of your meal?

$\frac{x}{6} = \frac{5}{100}$

$100x = 6(5)$

$100x = 30$

$x = \$0.30$

$\$6 + \$0.30 = \$6.30$

b) You and your friend want to go watch the Vancouver Canucks. The regular price of a ticket is $75 but due to Fan Appreciation day, there is a discount of 33%. If both PST and GST must be paid, what is the total cost of a ticket?

$\frac{x}{75} = \frac{33}{100}$

$100x = 33(75)$

$100x = 2475$

$x = \$24.75$

$\$75 - \$24.75 = \$50.25$

$\frac{x}{50.25} = \frac{12}{100}$

$12(50.25) = 100x$

$\$6.03 = x$

So $\$6.03 + \$50.25 = \$56.28$ ✓

3) Percent of a Percent

Example – Best Purchase offers a 10% off discount one day and then an additional 10% off the sale price the next day. If the item originally costs $30, find the sale price on the next day.

Day 1:

$\frac{x}{30} = \frac{10}{100}$

$x = \$3$

So $\$30 - \$3 = \$27$ ✓

Day 2:

$\frac{x}{27} = \frac{10}{100}$

$x = \$2.7$

So $\$27 - \$2.7 = \$24.3$ ✓

Your Turn

a) An iPod regularly priced at $200 is on sale for 10% off. However, the next day is Customer Appreciation day so the store is giving an additional 15% off the previous day's sale price. What is the sale price of the iPod on the next day?

Day 1:

$\frac{x}{200} = \frac{10}{100}$

$x = \$20$ So $\$200 - \$20 = \$180$ ✓

Day 2:

$\frac{x}{180} = \frac{15}{100}$

$x = \$27$ So $\$180 - \$27 = \$153$ ✓

b) Which store offers the better buy? Explain your thinking.

- Store A: 50% off one day only
- Store B: 25% off one day followed by 25% off the reduced price the second day

Store A:

$\$100$ is regular price.

$\frac{x}{100} = \frac{50}{100}$

$\$50$ is discount.

So $\$100 - \$50 = \$50$ ✓

Store B:

Day 1: $\$25$ is discount

So $\$100 - \$25 = \$75$ ✓

Day 2:

$\frac{x}{75} = \frac{25}{100}$

$x = \$18.75$

So $\$75 - \$18.75 = \$56.25$ ✓

∴ A is better!