

Do Now

1) Last year, there were 500 students in chorus. This year, there are 350 students in chorus. Find the percent change.

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$$\frac{150}{500} = \frac{500x}{500}$$

(decrease)

$x = .3$
30%

2) The temperature in the morning was 9 degrees C. The temperature then rose 2% during the day. What was the temperature at the end of the day?

% = 20%
change = x
original = 9°C

change = Original(%)
 $x = 9^{\circ}\text{C}(.2)$
 $x = 1.8$

$9 + 1.8$
 10.8°

Lesson #36 - Tax and Tip (Gratuity)

When you add TAX to an item, the cost of the item .

When you want to add a tip (gratuity), the final amount you pay is than the original amount.

Example 1) Answer the following.

A) You and 3 friends go out to dinner. The bill before tax is \$26.70. The tax is \$8.05. What is the final amount you pay (without tip)?

$26.70 + 8.05$
 $\$34.75$

B) You are going to see a play on Broadway. When you get out of Penn Station, you need to take an Uber to Time's Square. The Uber costs \$5.25 from Penn Station to Time's Square. Your Uber driver was very nice, so you decided to give him a \$3 tip. What is the final dollar amount you are paying for the Uber?

$5.25 + 3$
 $\$8.25$

Recall: Write the following formulas below.

<u>Percent Equation</u>	<u>Percent Change Equation</u>

We can now add another two formulas to our list:

<u>Tax</u>	<u>Tip (Gratuity)</u>
$\text{Tax} = \text{original}(\%)$ **PERCENTS MUST BE DECIMALS**	$\text{Tip} = \text{original}(\%)$ **PERCENTS MUST BE DECIMALS**

Example 1) Rachel's school supply items totaled \$142. She had to pay a 6% tax.

Part A) How much tax did Rachel have to pay?

Orig: 142 Tax = orig (%)
 tax: X X = 142(.06)
 %: 6% X = \$8.52 → Tax

Part B) What was the final cost of Rachel's school supplies after tax?

$$142 + 8.52 = \$150.52$$

Example 2) A restaurant bill is \$70 (including tax). You got great service, so you want to leave a 20% tip.

Part A) How much of a tip will you leave?

Orig: 70 Tip = orig (%)
 Tip: X X = 70(.2)
 %: 20 X = \$14 → Tip

Part B) What will be the total amount you will pay for the meal?

$$70 + 14 = \$84$$

Now, You Try!

3) Madison buys a pair of pants that were priced at \$60. There is 8.725% sales tax. How much will pants cost her?

Ori - 60
 tax - x
 % - 8.725
 Answer

$$x = 60(.08725)$$

$$60 + 5.24 = 65.24$$
 extra \$5.24

4) Chris plans to buy a new kayak that costs \$2,100. Where he lives there is a 7% sales tax. Find the total cost Chris will pay for the kayak.

Original 2,100
 Tax x
 % 7%

$$x = 2100(.07)$$

$$x = 147$$

	2100
+	147
	2247

$$x = \$2247$$

5) On Jason's vacation, he hired a guide for \$50. Jason wants to tip the guide 10%. How much will Jason have to spend?

ori \$ - 50
 tip - x
 % - 10

$$x = 50 \cdot .10 = 5$$
 5

$$50 + 5 = 55$$

6) Blaise wants to tip 15% on a restaurant bill that is \$35. What will be the total bill with tip?

tip: x
 %: 15%
 orig: 35

$$x = 35(.15)$$

$$x = 5.25 + 35 = 40.25$$

Challenge Problems

7) Lexi's family stayed at a hotel for 10 nights on their vacation. The hotel charged a 10% room tax, per night. How much did they pay in room taxes if the room cost \$200 per night?

Orig: 200

$$x = 200(.1)$$

$$20 \times 10 = \$200$$

tax: X

$$x = \$20$$

% : 10

8) Anthony went out to dinner with 4 of his friends. The bill came to \$85.34. After paying a 7.5% tax and 18% tip, how much did **each** person pay?

9) Andrea paid her cab driver a total of \$12.50 after tip. If she tipped 15% of the fare before the tip, what was her fare before tip?