

Get out your homework from ~~Wednesday~~ and have it ready to check. Warm Up on #18 - 20 on page 157

Classwork - Discount Percentage Problems

Find the total cost

18. \$7.50 meal; 6.5% tax _____

$$\frac{x \text{ tax}}{7.50} = \frac{6.5}{100} \quad x = 0.4875 \\ = \$0.49 (\text{tax})$$

$$\$7.50 + \$0.49 = \boxed{\$7.99}$$

20. \$89.75 scooter; $7\frac{1}{4}\%$ tax

$$\frac{x \text{ tax}}{89.75} = \frac{7\frac{1}{4}}{100} \quad x = 6.50625 \\ = \$6.51 (\text{tax})$$

$$\text{Total} = \boxed{\$96.26}$$

19. \$39 pizza order; 15% tip

$$\frac{x \text{ tip}}{39} = \frac{15}{100}$$

$$x = \$5.85$$

$$\text{Total} = \boxed{\$44.85}$$

The following decimals represent dollars and cents. Round the value to the nearest cent. (make sure to label your final answer with a \$ sign)

A) 0.158

B) 0.83333333...

C) 5.7273245

D) 45.9972

E) 2.584238

\$0.16

\$0.83

\$5.73

\$46.00

\$2.58

For each of the problems below, set up a proportion with one missing number (x). Make sure to label each of your numbers so you can see what it represents. Then solve the proportion. **SHOW WORK.**

1) Charlie bought one container of ice cream for \$2.99. If the sales tax rate is 8.5%. How much extra will Charlie have to pay for tax?

$$\frac{x}{2.99} = \frac{8.5}{100}$$

$x = 0.25415$
Tax $\$0.25$

2) Jerome goes to a restaurant with his family and the total amount they spent on food and drinks was \$34.68. He wants to give a 20% tip to his waiter. What amount should he tip?

$$\frac{x}{34.68} = \frac{20}{100}$$

$x = 6.936$
Tip $\$6.94$

3) Jessica goes out to eat and spends \$12.40 on a meal. She gives the waiter a tip of \$3.10. What percent of the bill did she tip the waiter?

$$\frac{3.10}{12.40} = \frac{x}{100}$$

$x = 25\% \text{ tip}$

4) Camden bought a shirt at the mall that costs \$15.99. At the register, the total cost of the shirt after tax is added is \$17.18.

A) What was the tax added to the cost of the shirt?

$$\$17.18 - \$15.99 = \$1.19$$

B) What percent is the sales tax?

$$\frac{1.19}{15.99} = \frac{x}{100}$$

$$x = 7.44\%$$

For the following problems, set up proportions to find the missing information. **SHOW ALL WORK.** With both Tax and Tip problems, you **ADD** that extra amount onto the total price of the items you are buying.

5) Maria purchases a bicycle for \$129.99. In New Haven, MO the sales tax rate is 8.73%.

A) How much will Maria spend on tax for the bicycle?

$$\frac{x}{129.99} = \frac{8.73}{100}$$
$$x = \$11.35$$

B) Find the total cost of the item?

$$129.99 + 11.35$$
$$= \boxed{\$141.34}$$

6) Shawn went on vacation and buys a meal at a restaurant for \$8.99, taxes not included.

A) If he spent \$0.62 on tax, what percent extra did he have to spend on the \$8.99 meal? (Round to the nearest hundredth.)

$$\frac{0.62}{8.99} = \frac{x}{100} \quad x = 6.90\% \text{ tax}$$

B) Shawn pays with a credit card, so he can easily write any amount to leave as a tip. If he wants to leave a 20% tip, how much money should he write on the tip line?

$$\frac{x \text{ tip}}{8.99} = \frac{20}{100} \quad x = \$1.80 \text{ tip}$$

C) After the cost of the meal, tax, and tip, how much did Shawn spend at the restaurant?

$$\$8.99 + \$0.62 + \$1.80 = \$11.41$$



Real-World Link

Water Parks A pass at a water park is \$58 dollars at the beginning of the season. The cost of the pass decreases each month.

1. Each month 10% is taken off the price of a season pass. Find the discounted price for August by completing the fill-ins below.



Price in July

Write 10% as a decimal.

Amount of discount

×

=



Price in July

Amount of discount

Discounted price for August

−

=

2. Multiply 0.9 and \$52.20. How does the result compare to your answer in Exercise 1?

3. Write the definition of *discount* in your own words. _____

Find Sale Price and Original Price

Discount or **markdown** is the amount by which the regular price of an item is reduced. The sale price is the regular price minus the discount.



Example



1. A DVD normally costs \$22. This week it is on sale for 25% off the original price. What is the sale price of the DVD?



Method 1 Subtract the discount from the regular price.

First, find the amount of the discount.

Let d represent the discount.

part = percent \times whole Write the percent equation.

$$d = 0.25 \times 22 \quad 25\% = 0.25.$$

$$d = 5.50 \quad \text{Multiply.}$$

Next, subtract the discount from the regular price.

$$\$22 - \$5.50 = \$16.50$$

Method 2 Subtract the percent of discount from 100%.

$$100\% - 25\% = 75\% \quad \text{Subtract the discount from 100\%.}$$

The sale price is 75% of the regular price.

Let s represent the sale price.

part = percent \times whole Write the percent equation.

$$s = 0.75 \times 22 \quad 75\% = 0.75$$

$$s = 16.50 \quad \text{Multiply.}$$

The sale price of the DVD is \$16.50.

$$\begin{array}{l} \% \text{ Proportion} \\ \hline x \text{ discount} \\ \hline \frac{x}{22} = \frac{25}{100} \end{array}$$

$$100x = \frac{550}{100}$$

$$x = \$5.50 \text{ discount}$$

$$\text{Sale Price} = \$22 - \$5.50 = \$16.50$$

Got it? Do this problem to find out.

- a. A shirt is regularly priced at \$42. It is on sale for 15% off of the regular price. What is the sale price of the shirt?

$$\frac{x^{\text{discount}}}{42} = \frac{15}{100} \quad 100x = \frac{630}{100}$$
$$x = \$6.30$$

$$\$42 - \$6.30 = \$35.70$$



Example



2. A boogie board that has a regular price of \$69 is on sale at a 35% discount. What is the sale price with 7% tax?

Step 1 Find the amount of the discount.

Let d represent the discount.

part = percent \times whole Write the percent equation.

$$d = 0.35 \times 69 \quad 35\% = 0.35$$

$$d = 24.15 \quad \text{Multiply.}$$

Step 2 Subtract the discount from the regular price.

$$\$69 - \$24.15 = \$44.85$$

Step 3 The percent of tax is applied after the discount is taken.

$$7\% \text{ of } \$44.85 = 0.07 \cdot 44.85 \quad \text{Write 7\% as a decimal.}$$

$$= 3.14 \quad \text{The tax is } \$3.14.$$

$$\$44.85 + \$3.14 = \$47.99 \quad \text{Add the tax to the sale price.}$$

The sale price of the boogie board including tax is \$47.99.

$$\frac{x \text{ discount}}{69} = \frac{35}{100}$$

$$100x = \frac{2415}{100}$$

$$x = \$24.15 \text{ (discount)}$$

$$\$69 - \$24.15 = \$44.85$$

$$\frac{x \text{ taxes}}{44.85} = \frac{7}{100}$$

$$x = 3.1395 = \$3.14 \text{ (taxes)}$$

$$\$44.85 + \$3.14 = \$47.99$$

Got it? Do this problem to find out.

- b. A CD that has a regular price of \$15.50 is on sale at a 25% discount. What is the sale price with 6.5% tax?



Example

3. A cell phone is on sale for 30% off. If the sale price is \$239.89, what is the original price?

The sale price is 100% – 30% or 70% of the original price.

Let p represent the original price.

$$\text{part} = \text{percent} \times \text{whole}$$

$$239.89 = 0.7 \times p$$

$$\frac{239.89}{0.7} = \frac{0.7p}{0.7}$$

Divide each side by 0.7.

$$342.70 = p$$

Simplify.

The original price is \$342.70.

Got it? Do this problem to find out.

- c. Find the original price if the sale price of the cell phone is \$205.50.

$$100\% - 30\% = 70\%$$

$$\frac{239.89}{\text{original price}} = \frac{70}{100}$$

$$70x = 23989$$
$$\frac{23989}{70}$$

$$x = \$342.70$$