

Objective Introducing Proportions to Solve Percent Problems

Warm-Up



The regular price of a bathing suit is \$85.99.

Estimate the sale price of the bathing suit for each of the following sales.

1. 75% off regular price

Sample worked out

Round \$85.99 to \$86



Since we take 75% off regular price, we multiply by 25% which is the remaining value of 100%

Convert 25% to a fraction $\frac{25}{100}$

$$86 \times \frac{25}{100} = \frac{2,150}{100}$$

$$2,150 \div 100 = 21.50$$

The bathing suit price cost \$21.50 after 75% off

2. 32% off regular price

3. 55% off regular price

4. 15% off regular price



Chet is planning his vacation. The flight he selected was \$229.99 but he got 20% off because he booked it online through a new travel website. What did he pay?

1. Explain why Katie's answer is incorrect. Then, determine the correct answer.

Katie



$$\frac{20}{100} = \frac{x}{229.99}$$

$$(20)(229.99) = 100x$$

$$\frac{4599.8}{100} = \frac{100x}{100}$$

$$45.998 = x$$

So, Chet paid about \$46.

2. Explain why Emma's method worked.

Emma



$$\frac{80}{100} = \frac{x}{229.99}$$

$$(80)(229.99) = 100x$$

$$\frac{18399.2}{100} = \frac{100x}{100}$$

$$183.99 = x$$

Chet paid \$183.99 for his flight.

Solve each problem.

3. Anita sold USB thumb drives for \$4.95, which was a 10% markup from what she paid for each. How much did Anita pay for the drives?

4. Games that usually sell for \$36.40 are on sale for \$27.30. What percent off are they?

5. Jimmy's new cell phone cost him \$49.99 when he signed a 2-year plan, which was 75% off the original price. What was the original price?

6. Liz is shopping for a game system. Two competing stores offer deals on the system that she wants to purchase.

Game Hut
• \$375
• 15% off sale on all game systems

Fun n Games
• \$399
• \$50 rebate after the purchase


Where should Liz shop? Show all of your work and explain your reasoning.

7. Dante has been shopping around for a new mountain bike. He found two bikes that he likes equally—one is sold at Mike’s Bikes for \$300, and the other is sold at Cycle Center for \$275.

Dante has a coupon for 25% off any bike at Mike’s Bikes. However, the manufacturer of the bike at Cycle Center has included a \$40 rebate after the purchase of the bike.

Where should Dante purchase his mountain bike? Show all of your work and explain your reasoning.

8. Barry is shopping for a new sweater that originally cost \$50.00. The department store has all items marked down by 20%. He also has a coupon for an additional 10% off all purchases.

Barry 

Since all items are marked down by 20%, and I have an additional 10% off, that means I get a 30% discount.

$$\frac{30}{100} = \frac{X}{50}$$
$$2X = 30$$
$$X = 15$$

The cost of the sweater is \$50.00 - \$15.00 = \$35.00.

Describe Barry’s mistake. Then calculate how much Barry will pay for the sweater.



The Shoe Super Store sells name brand shoes at a price much less than most department stores. The chart hanging in the store displays the normal price of the shoes and the Shoe Super Store price.

Regular Department Store Price	Shoe Super store Price
\$20	\$16
\$25	\$20
\$30	\$24
\$35	\$28
\$40	\$32
\$50	\$40

Alfie



The Shoe Super Store prices do not vary directly with the regular department store prices.

A \$20 pair of shoes is only \$4 cheaper at the Shoe Super Store, while a \$50 pair of shoes is \$10 cheaper at Shoe Super Store.

1. Explain what is wrong with Alfie's reasoning.

2. What is the constant of proportionality? Interpret the constant of proportionality for this problem situation.

3. Define the variables and write an equation to represent the relationship between the department store price and Shoe Super Store price.

4. What is the Shoe Super Store price for a pair of shoes that cost \$28 at the department store? Explain your reasoning.

5. What is the department store price for a pair of shoes that cost \$15 at Shoe Super Store? Explain your reasoning.



**Show You
KNOW**

Percent and Proportions

Demonstrate how to solve any type of percent problem with proportions.

1. Write each proportion, with a variable in the appropriate place, to calculate each specific unknown.

a. Calculate the Percent

b. Calculate the Part

c. Calculate the Whole



LESSON 4.1b

Markups and Markdowns



Objective

Introducing Proportions to Solve Percent Problems

Practice

1. The cable provider's "triple play" package offers a land line, internet service, and cable TV for one fixed price. If you already subscribe to their cell phone service they offer an additional 12% off the price of the triple play package. If the discounted price of the triple play is \$132, what is the price of the package without the discount?
2. The O! Natural Company sells a juice in 1 gallon bottles. The current retail price of the juice is \$3.50 for 1 gallon. In order to remain competitive, the company will decrease the price to \$3.20.
 - a. What percent of the original price are consumers going to pay?
 - b. Suppose the company's cost per 1 gallon is \$2.70. What is the markup if they sell each gallon at \$3.20? What is the markup if they sell each gallon at \$3.50?
3. The O! Natural Company is trying to get schools in the state to sell their juice product.
 - a. If the sales representative went to 300 schools and convinced 125 to sell their product, what percentage decided to not sell their product? Use two different strategies to calculate the answer.
 - b. The sales representative made a deal with the schools for a discount on the individual juice bottles. The company usually sells the bottles to the distributors for \$2.25, but they are selling them to the schools for 15% off. For what price will they sell each bottle to the schools?
 - c. Suppose the schools pay \$2.00 per bottle for the juice and sell it to community members for \$2.50 per bottle. What percent markup are they charging?