

## Example 10

Melissa Bell wishes to buy a house for \$287,000. To obtain a mortgage, she needs to pay 20% of the selling price as a down payment. Determine the amount of Melissa's down payment.

## Example 11

In 2006, Chess Federation (USCF) had about 84,000 members. Of these members, about 11,000 were considered youth members (under the age of 18). What percent of USCF members were youth members?

## Example 12

About 337,567,000 or about 31% of India's population is younger than 15 years old. What is the approximate population of India?

## Worksheet 11.1

## Set up an equation for each word problem and solve.

1. There were approximately 15.7 million labor union members in the SD in 2005. This number is down from approximately 16.3 million members in 2001. Determine the percent change in labor union membership from 2001 to 2005.

2. Aces Hardware stores pay \$10 for snow roof rakes. They regularly sell them for \$45. At a sale this past weekend, they were selling the rakes for \$40.

- a) Determine the percent markup on the regular price.

$$\frac{45-10}{10} \times 100 = 350\%$$

- b) Determine the percent markup on the weekend sale price.

$$\frac{40-10}{10} \times 100 = 300\%$$

3. To help get rid of its remaining winter sweaters, Target reduces the price to \$10.00. If the cost per sweater was \$23.00, determine the percent markdown on the sweaters.

$$\frac{10-23}{23} \times 100 = -56.5\%$$

sweater

4. What is an 18% tip on a restaurant bill of \$58.95?  $.18 \cdot 58.95 = \$10.61$

How much money do you owe overall including the tax and tip? (assume 6.5% sales tax in CT)

$$.065(58.95) = 3.83 + 58.95 + 10.61$$

How much would each of you contribute if you went out to dinner with two friends?

$$\frac{73.39}{3} = 24.46$$

5. If Nikki made a sale of \$400 and received a commission of \$25, what percent of the sale was the commission?

$$X \cdot 400 = 25$$

$$X = 6.3\%$$

6. If the price of a pair of jeans was reduced by 30% or \$10, what was the original price of the jeans?

$$.30 \cdot X = 10$$

$$X = \$33.33$$

7. Sarah wishes to buy a house for \$356,000. To obtain a 30-year mortgage, she needs to pay 15% of the selling price as a down payment. Determine the amount of Sarah's down payment.

$$.15(356,000) = 53,400$$

8. About 130,423,000, or about 28%, of USA's population is younger than 15 years old. What is the approximate population of USA?

$$.28 \cdot X = \frac{130,423,000}{.28}$$

9. A coat is marked down 10%, and the customer has a coupon that reads "take an additional 15% off of all sale items". Does that mean that the customer is getting 25% off of the original price?

$$.10(100) = 10 \quad 90(.15) = 13.50 = 76.50$$

$$.25(100) = 25 = 75$$

10. The regular price of a chair is \$189.99. Determine the sale price if the regular price is reduced by 10% and then this price is reduced by another 25%.

- a) What would the sale price of the chair be if the chair was 25% off of the original price?

26. *Potassium* The U.S. Department of Agriculture's recommended daily allowance (USRDA) of potassium for adults is 3500 mg. One serving of Cheerios provides 95 mg of potassium. What percent of the USRDA of potassium does one serving of Cheerios provide?

$$x \cdot 3500 = 95$$
$$2.7\%$$

27. *Reduced Fat Milk* One serving of whole milk contains 8 g of fat. Reduced-fat milk contains 41.25% less fat per serving than whole milk. How many grams of fat does one serving of reduced-fat milk contain?

$$.4125(8) = -3.3$$

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$$4.7g$$

41. *Decreasing Population* In 2000, the population of North Dakota was 642,200. In 2005, the population of North Dakota had decreased to 636,677. Determine the percent decrease in North Dakota's population from 2000 to 2005.

$$\frac{636,677 - 642,200}{642,200} = -0.86\%$$

42. *Increasing Population* The population of the United States rose from approximately 248.7 million in 1990 to approximately 298.3 million in 2006. Determine the percent increase in the U.S. population from 1990 to 2006.

$$\frac{298.3 - 248.7}{248.7} \times 100 = 19.9\%$$

**ix and Tip** According to the Original Tipping Page ([www.tipping.org](http://www.tipping.org)), it is appropriate to tip waiters and waitresses 15–20% of the total restaurant bill, *including the tax*. Mary and Keith's dinner costs \$43.50 before tax, and the tax rate is 6%.

What is the tax on Mary and Keith's dinner?

What is the total bill, including tax, before the tip?

If Mary and Keith decide to tip 15% of the total bill, how much is the tip?

What is the total cost of the dinner including tax and tip?

55. *Percentage of A's* In a mathematics class, eighteen students received an A on the third test, which is 150% of the students who received an A on the second test. How many students received an A on the second test?

$$1.50x = \frac{18}{1.50}$$

$$x = 12$$

56. *Employee Increase* The Fastlock Company hired 57 new employees, which increased its staff by 30%. What was the original number of employees?

$$.30x = \frac{57}{.30}$$

$$x = 190$$

59. *Vacuum Cleaner Sales* A Kirby vacuum cleaner dealership sold 430 units in 2006 and 407 units in 2007. Find the percent increase or decrease in the number of units sold.

$$\frac{407 - 430}{430} \times 100 = -5.3\%$$

60. *Vacuum Cleaner Markup* If the Kirby dealership in Exercise 59 pays \$320 for each unit and sells it for \$699, what is the percent markup?

$$\frac{699 - 320}{320} \times 100 = 118.4\%$$