

4.8

Word Problem on Percentage: Problem Type 2

• Example 1

You borrow \$2000 from a bank for 1 year and are charged \$150 interest. What is the interest rate?

Solution The unknown interest rate is a percent p of 2000. We obtain:

$$p\% \times 2000 = \frac{p}{100} \times 2000 = p \times 20 = 150$$

Thus, dividing by 20 on both sides of the last equation,

$$p = \frac{150}{20} = \frac{15}{2} = 7.5.$$

The interest rate is 7.5%.

• • • CHECK YOURSELF 1

Xian borrowed \$3200 and was charged \$352 in interest for 1 year. What was the interest rate?

• Example 2

Ms. Hobson agrees to pay 11% interest on a loan for her new automobile. She is charged \$550 interest on a loan for 1 year. How much did she borrow?

Solution The problem involves finding some amount A such that 11% of A is 550. That is,

$$550 = 11\% \times A = \frac{11}{100} \times A.$$

Multiplying by 100 and dividing by 11 on both sides gives

$$A = \frac{550 \times 100}{11} = \frac{55,000}{11} = 5000.$$

She borrowed \$5000.

• • • CHECK YOURSELF 2

Sue pays \$210 interest for a 1-year loan at 10.5%. What was the size of her loan?

• • • CHECK YOURSELF ANSWERS

1. 11%. 2. \$2000.

4.8 Exercises

Name _____

Section _____

Date _____

A N S W E R S

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Solve each of the following applications.

1. Commission. If a salesman is paid a \$140 commission on the sale of a \$2800 sailboat, what is his commission rate?

2. Interest. Ms. Jordan has been given a loan of \$2500 for 1 year. If the interest charged is \$275, what is the interest rate on the loan?

3. Interest. Joan was charged \$18 interest for 1 month on a \$1200 credit card balance. What was the monthly interest rate?

4. Chemistry. There are 117 grams of acid in 900 g of a solution of acid and water. What percent of the solution is acid?

5. Test scores. On a test, Alice had 80% of the problems right. If she had 20 problems correct, how many questions were on the test?

6. Sales tax. A state sales tax rate is 3.5%. If the tax on a purchase is \$7, what was the amount of the purchase?

7. Loan amount. Patty pays \$525 interest for a 1-year loan at 10.5%. What was the amount of her loan?

8. Commission. A saleswoman is working on a 5% commission basis. If she wants to make \$1800 in 1 month, how much must she sell?

9. **Unemployment.** A study has shown that 102 of the 1200 people in the workforce of a small town are unemployed. What is the town's unemployment rate?
10. **Surveys.** A survey of 400 people found that 66 were left-handed. What percent of those surveyed were left-handed?
11. **Dropout rate.** Of 60 people who start a training program, 45 complete the course. What is the dropout rate?
12. **Manufacturing.** In a shipment of 250 parts, 40 are found to be defective. What percent of the parts are faulty?
13. **Surveys.** In a recent survey, 65% of those responding were in favor of a freeway improvement project. If 780 people were in favor of the project, how many people responded to the survey?
14. **Enrollments.** A college finds that 42% of the students taking a foreign language are enrolled in Spanish. If 1512 students are taking Spanish, how many foreign language students are there?
15. **Salary.** 22% of Samuel's monthly salary is deducted for withholding. If those deductions total \$209, what is his salary?
16. **Budgets.** The Townsends budget 36% of their monthly income for food. If they spend \$864 on food, what is their monthly income?

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