LESSON 7

Percent

MATH CONTENT TOPICS: Q.2.a, Q.2.e, Q.3.c, Q.3.d, Q.6.c
MATH PRACTICES: MP.1.a, MP.1.b, MP.1.e, MP.2.c, MP.3.a, MP.4.a

1 Learn the Skill

As with fractions and decimals, **percents** show part of a whole. Recall that, with fractions, a whole can be divided into any number of equal parts. With a decimal, the number of equal parts must be a power of 10. Percent always compares amounts to 100. The percent sign, %, means "out of 100."

There are three main parts of a percent problem—the base, the part, and the rate. The **base** is the whole amount. The **part** is a piece of the whole or base. The **rate** tells how the base and whole are related. The rate is always followed by a percent sign. You can use proportions to solve percent problems.

2 Practice the Skill

By practicing the skills of finding percents and solving percent problems, you will improve your study and test-taking abilities, especially as they relate to the GED® Mathematical Reasoning Test. Study the table and information below. Then answer the question that follows.

a To convert a fraction to a decimal, divide the numerator by the denominator. To convert a decimal to a fraction, write the decimal digits as the numerator and the place value of the last digit as the denominator. Simplify. To write a decimal as a percent, multiply by 100. Do the reverse to write a percent as a decimal. To write a percent as a fraction, write the percent as the numerator of a fraction with denominator 100, then simplify.

Fraction	Decimal	Percent
$\frac{1}{5}$ →	$1 \div 5 = 0.2$ →	$0.2 \times 100 = 20$ → 20%
$\frac{1}{4} = \frac{25}{100}$ ←	$25 \div 100 = 0.25$ ←	25%
$\frac{1}{2} = \frac{50}{100}$ ←		50%

b To find a percent of change, subtract the original amount from the new amount to find the amount of change. Divide the difference by the original amount. Convert the decimal to a percent. To compute interest (I), multiply the amount borrowed (p) by the rate (r), written as a decimal, and the time (t), written in years.

Use a Proportion

Zach answered 86% of the questions on a math exam correctly. If there were 50 questions, how many questions did Zach answer correctly?

$\frac{\text{Part}}{\text{Base}} = \frac{\text{Rate}}{100}$ $\quad \frac{?}{50} = \frac{86}{100}$ $\quad 50 \times 86 = 4300 \rightarrow 4300 \div 100 =$ **43 questions**

Find Percent Increase or Decrease

Last year, Kareem paid $750 a month in rent. This year he pays $820 a month. What's the percent increase?

$\$820 - \$750 = \$70.00$
$\$70.00 \div \$750 = 0.09$
$0.09 \times 100 =$ **9%**

Interest Problems

Kelly took out a $20,000 loan for 4 years at 3% interest. How much interest (I) will she pay?

$I = prt$
$I = \$20{,}000 \times 0.03 \times 4$
$I =$ **$2,400**

1. In a neighborhood, 27 of the 45 children are in elementary school. What percent of children in the neighborhood are in elementary school?

A. 20%
B. 40%
C. 60%
D. 166%

USING LOGIC

Recall that a fraction is a ratio of part to whole. A percent is a ratio with a denominator of 100. When using a proportion, set the rate over 100 to equal the part over the base.

Spotlighted Item: DROP-DOWN

DIRECTIONS: Read each situation, and choose the option that **best** completes each sentence.

2. Shelly's Boutique is advertising 25% off all merchandise.

   Customers will save [Drop-down] off the original price during the sale.

   A. $\frac{1}{4}$ B. $\frac{1}{2}$ C. $\frac{2}{3}$ D. $\frac{3}{4}$

3. City Electric provides electricity for $\frac{1}{8}$ of the homes in Center City.

   City Electric provides electricity for [Drop-down] % of homes.

   A. 8 B. 10.5 C. 12.5 D. 80

4. In a survey, 0.22 of the respondents answered "Yes" to the question, "Would you consider voting for a candidate from a third party?"

   [Drop-down] of respondents answered "No."

   A. $\frac{11}{50}$ B. $\frac{39}{50}$ C. $\frac{78}{10}$ D. $\frac{22}{100}$

5. The Strikers girls soccer team won 9 of its 13 games.

   The Strikers won approximately [Drop-down] % of the games.

   A. 61.5 B. 66.7 C. 69.2 D. 76.9

6. At Bright Minds Learning, 75% of employees work as instructors. There are 300 employees at Bright Minds Learning.

   [Drop-down] employees work as instructors.

   A. 150
   B. 175
   C. 200
   D. 225

DIRECTIONS: Read each situation, and choose the option that **best** completes each sentence.

7. Tia earns $552 per week. Of this amount, 12% is deducted for taxes.

   $ [Drop-down] is deducted each week.

   A. 6.62 B. 55.20 C. 66.24 D. 485.76

8. Andrew received a raise from $24,580.00 per year to $25,317.40 per year.

   He received a raise of [Drop-down] %.

   A. 2 B. 3 C. 7.4 D. 29

9. Isabella paid $425 for a new bicycle, plus 6% sales tax.

   She paid a total of $ [Drop-down].

   A. 25.50 B. 27.50 C. 450.50 D. 457.50

10. A sofa is regularly priced at $659 but is on sale for 20% off.

    The sale price of the sofa is $ [Drop-down].

    A. 639.00 B. 527.20 C. 450.80 D. 131.80

11. A computer company received 420 customer service calls in one day. Forty-five percent of the calls were about software issues.

    [Drop-down] of the calls were about software.

    A. 19 B. 189 C. 229 D. 231

12. Daria invested $5,000 in an account that earns 5% interest annually.

    She will earn $ [Drop-down] in interest over nine months.

    A. 5,250.00
    B. 1,875.00
    C. 250.00
    D. 187.50