

NAME _____

Module 7 **Ratio, Proportion, and Percent**
Lesson 6 **Using Percent Equations**



Independent Practice

7.6

1. What is 75% of 400?
300

2. What is 160% of 30?
48

3. What is 15% of 450?
67.5

4. What is 80% of five?
4

5. What percent of 40 is 20?
50%

6. What percent of 16 is 12?
75%

7. Eight is what percent of 10?
80%

8. What percent of 16 is 20?
125%

9. 60% of what number is 18?
30

10. 15% of what number is 30?
200

11. 25 is 6.25% of what number?
400

12. 550% of what number is 55?
10

13. At this year's checkup, Sally's dog weighed 120% of what it did at last year's visit. Last year, Sally's dog weighed 35 pounds. How much does her dog weigh this year?

Sally's dog weighs 42 pounds.

14. Duncan bought a fishing pole for \$30. This is 60% of what his dad paid for his fishing pole. How much did Duncan's dad pay for his fishing pole?

Duncan's dad paid \$50 for his fishing pole.

15. There are 40 questions on a test. To pass the test, Troy must answer at least 65% of the questions correctly. What is the greatest number of questions Troy can answer incorrectly and still pass the test?

14 questions

16. In a school of 825 students, 495 of the students are girls. What percent of the students in the school are girls? What percent are boys?

60% girls; 40% boys

17. Celina bought a CD with a coupon for 15% off. She paid \$20.40 for the CD. How much would she have paid without the coupon?

She would have paid \$24.00 without the coupon.

18. Thea answered 16 out of 25 test questions correctly. She needed to answer at least 65% of the questions correctly to pass. Did Thea pass the test? Why or why not?

No; she only answered 64% of the questions correctly.

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Journal

1. Explain the difference between the following two questions. Then, answer each question.

What percent of five is 10?
What percent of 10 is five?

2. Describe how to use the percent proportion to answer: What is 250% of 10? Then, describe how you can use mental math to find the answer.
3. Describe how to use the percent proportion to answer: 20% of what number is 30? Then, describe how to find the answer by writing an equation.
4. Ron answered, “What percent of 20 is three?” and got 15%. How would you explain to Ron how he can check his answer?

Cumulative Review

Evaluate.

1. $23^2 - \sqrt{100}$

519

2. $\sqrt{64} + \sqrt{9}$

11

Find the decimal and percent equivalents.

3. $\frac{17}{20}$

Decimal: 0.85
Percent: 85%

4. $1\frac{1}{10}$

Decimal: 1.1
Percent: 110%

Estimate.

5. 18% of 195

20% of 200 = 40

6. 73% of \$1,099

$\frac{3}{4} \times \$1,000 = \750

7. Brittney raked nine bags of leaves in $2\frac{1}{2}$ hours. What is the unit rate per hour?

Brittney raked $3\frac{3}{5}$ bags per hour.

8. Heidi ran 12 laps around the school in 10 minutes. Jena ran nine laps around the school in six minutes. Which of the two girls is running at a faster rate? Explain.

Jena is running at a faster rate. Heidi runs at a rate of 1.2 laps per minute, and Jena runs at a rate of 1.5 laps per minute; so after 30 minutes, Heidi runs 36 laps while Jena runs 45 laps.

Possible Journal Answers

1. In the question “What percent of five is 10?,” five is the whole and 10 is the part. Because the part is greater than the whole, the percent will be greater than 100. In “What percent of 10 is five?,” 10 is the whole and five is the part. Because the part is less than the whole, the percent will be less than 100.

What percent of five is 10?

$$\frac{10}{5} = \frac{?}{100}$$

$$\frac{10 \times 20}{5 \times 20} = \frac{200}{100}$$

200%

What percent of 10 is five?

$$\frac{5}{10} = \frac{?}{100}$$

$$\frac{5 \times 10}{10 \times 10} = \frac{50}{100}$$

50%

2. I begin by identifying the percent, the part, and the whole. The percent is 250, the part is unknown, and the whole is 10. I use a question mark or letter to represent the unknown. Substitute into the percent proportion $\frac{\text{part}}{\text{whole}} = \frac{\text{percent}}{100}$ to get $\frac{n}{10} = \frac{250}{100}$. In the denominators, $100 \div 10 = 10$, so I divide 250 by 10 in the numerators: $\frac{25}{10} = \frac{250 \div 10}{100 \div 10}$. The unknown is 25.

To use mental math, I think: 100% of 10 is 10, so 200% of 10 is twice as much, or 20. To get another 50% to make 250%, I think 100% of 10 is 10, so 50% of 10 is half as much, or five. Then I add: $20 + 5 = 25$.

3. The percent is 20, the part is 30, and the whole is unknown. I substitute into the percent proportion to get $\frac{30}{n} = \frac{20}{100}$, and solve the proportion by finding the cross products.

$$20 \times n = 30 \times 100$$

$$20 \times n = 3,000$$

$$n = 150$$

Twenty percent of 150 is 30.

To solve by writing an equation, I replace 20% with 0.2, *of* with \times , *what number* with n , *is* with $=$, and then write 30, in that order: $0.2 \times n = 30$. I divide both sides by 0.2. The left side simplifies to n , and the right side simplifies to 150.

4. To check, Ron can find 15% of 20 and can see if the answer is three.

15% of 20

$$0.15 \times 20$$

3

The answer is three, so 15% is the correct percent.