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Unit 6, Lesson 7: Revisit Percentages

Let's use equations to find percentages.

7.1: Number Talk: Percentages

Solve each problem mentally.

1. Bottle A contains 4 ounces of water, which is 25% of the amount of water in Bottle B. How much water is there in Bottle B?

2. Bottle C contains 150% of the water in Bottle B. How much water is there in Bottle C?

3. Bottle D contains 12 ounces of water. What percentage of the amount of water in Bottle B is this?

7.2: Representing a Percentage Problem with an Equation

1. Answer each question and show your reasoning.

   a. Is 60% of 400 equal to 87?

   b. Is 60% of 200 equal to 87?

   c. Is 60% of 120 equal to 87?

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2. 60% of x is equal to 87. Write an equation that expresses the relationship between 60%, x, and 87. Solve your equation.

3. Write an equation to help you find the value of each variable. Solve the equation.

   a. 60% of c is 43.2.							b. 38% of e is 190.

7.3: Puppies Grow Up, Revisited

1. Puppy A weighs 8 pounds, which is about 25% of its adult weight. What will be the adult weight of Puppy A?

2. Puppy B weighs 8 pounds, which is about 75% of its adult weight. What will be the adult weight of Puppy B?

3. If you haven't already, write an equation for each situation. Then, show how you could find the adult weight of each puppy by solving the equation.

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Are you ready for more?

Diego wants to paint his room purple. He bought one gallon of purple paint that is 30% red paint and 70% blue paint. Diego wants to add more blue to the mix so that the paint mixture is 20% red, 80% blue.

1. How much blue paint should Diego add? Test the following possibilities: 0.2 gallons, 0.3 gallons, 0.4 gallons, 0.5 gallons.

2. Write an equation in which x represents the amount of paint Diego should add.

3. Check that the amount of paint Diego should add is a solution to your equation.

Lesson 7 Summary

If we know that 455 students are in school today and that number represents 70% attendance, we can write an equation to figure out how many students go to the school.

The number of students in school today is known in two different ways: as 70% of the students in the school, and also as 455. If s represents the total number of students who go to the school, then 70% of s, or $\frac{70}{100}s$, represents the number of students that are in school today, which is 455.

We can write and solve the equation:

$$\frac{70}{100}s = 455$$
$$s = 455 \div \frac{70}{100}$$
$$s = 455 \cdot \frac{100}{70}$$
$$s = 650$$

There are 650 students in the school.

In general, equations can help us solve problems in which one amount is a percentage of another amount.

Unit 6, Lesson 7: Revisit Percentages

1. A crew has paved $\frac{3}{4}$ of a mile of road. If they have completed 50% of the work, how long is the road they are paving?

2. 40% of x is 35.

   a. Write an equation that shows the relationship of 40%, x, and 35.

   b. Use your equation to find x. Show your reasoning.

3. Priya has completed 9 exam questions. This is 60% of the questions on the exam.

   a. Write an equation representing this situation. Explain the meaning of any variables you use.

   b. How many questions are on the exam? Show your reasoning.

4. Answer each question. Show your reasoning.

   a. 20% of a is 11. What is a?

   c. 80% of c is 20. What is c?

   b. 75% of b is 12. What is b?

   d. 200% of d is 18. What is d?

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5. For the equation $2n - 3 = 7$

   a. What is the variable?

   b. What is the coefficient of the variable?

   c. Which of these is the solution to the equation? 2, 3, 5, 7, n

(from Unit 6, Lesson 2)

6. Which of these is a solution to the equation $\frac{1}{8} = \frac{2}{5} \cdot x$?

   A. $\frac{2}{40}$
   B. $\frac{5}{16}$
   C. $\frac{11}{40}$
   D. $\frac{17}{40}$

(from Unit 6, Lesson 2)

7. Find the quotients.

   a. $0.009 \div 0.001$

   b. $0.009 \div 0.002$

   c. $0.0045 \div 0.001$

   d. $0.0045 \div 0.002$

(from Unit 5, Lesson 13)