

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Video Notes -  
Keep in your notebook**

## INTRODUCTION TO PERCENT N-GEN MATH® 6



By this time in your life you have likely heard of and even used percents to quantify things. Perhaps you earned a 90 percent (%) on your last test. Maybe you read that the chance of snow tomorrow is 30 percent, or 30%. In this lesson we will learn how percents are ratios or rates just like we saw in Unit 7. We will start to explore the idea of a percent in the next problem.

**Exercise #1:** On a recent test in English, Jorge scored 17 out of 20 points. His friend Ava has a different English teacher and scored 20 out of 25 on a similar test.

- (a) Why is it difficult to say who scored better on their test?
- (b) Give a fraction for both Jorge and Ava that represents the ratio of the questions they got correct to the total number of questions. Do not simplify.

Jorge:

Ava:

- (c) Rewrite each fraction in (b) as an equivalent fraction whose denominator is 100. Show how you got your fractions.
- (d) Who did better on the English test, Jorge or Ava? Justify based on (c).

Jorge:

Ava:

### PERCENT (PER 100)

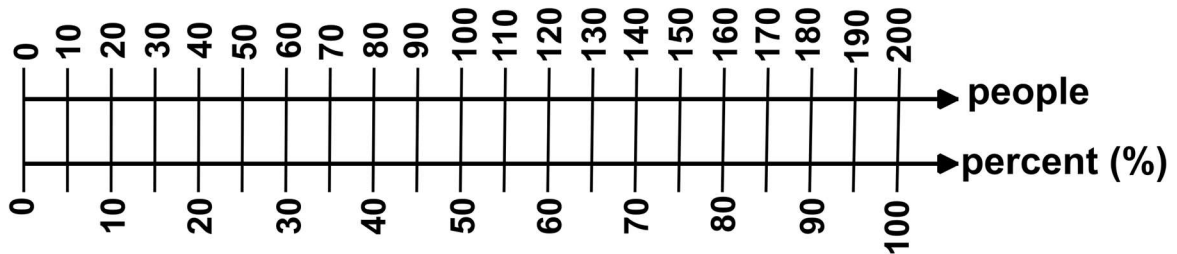
A **percent** is the numerator of a ratio whose denominator is 100. A percent is therefore a rate per 100 (**cent** being the Latin prefix for 100). It is symbolized by the % symbol.

**Exercise #2:** If 6 out of 10 cats at a shelter have long hair, what percent of the cats at the shelter have long hair? Show the original ratio and then its conversion to a ratio **out of 100**.



Since percentages are a specialized ratio or rate per 100, we can use tools like double number lines to help us visualize what is happening with them.

**Exercise #3:** 200 people stop by a food stand on a Saturday. Use the double number line below to help answer the following questions about percent.



- (a) If 40 people buy lemonade while at the food stand, what percent of the people bought lemonade? Illustrate on the number line.
- (b) If 65% of all people who stop by the food stand order a sandwich, how many people ordered a sandwich? Illustrate on the number line.

In the previous exercises it was relatively easy to determine the percent. Sometimes it is a bit trickier.

**Exercise #4:** In a classroom of 32 students, 24 of them own a cellphone.

- (a) Write the fraction of students who own a cell phone in simplest form (i.e. the ratio of those with cell phones to total students).
- (b) What percent of students own a cell phone? Convert your fraction in (a) to one with a denominator of 100 to answer.

**Exercise #5:** Answer each of the following problems about percent. Show how you found your answers. You may have to reduce your ratio first before converting it to a fraction out of 100.

- (a) When Francine flips a coin 25 times, it comes up heads 11 times. What percent of the tosses came up heads?
- (b) Justin got 28 out of 40 questions correct on his quiz. What percent of the questions did Justin get correct?



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**INTRODUCTION TO PERCENT  
N-GEN MATH<sup>®</sup> 6 HOMEWORK**

**Turn this page in**

**FLUENCY**

**Starting with problem #2, you MUST show work to receive full credit.**

1. A percent measures a rate

(1) per unit                      (3) per 100 units

(2) per 10 units                (4) per 1000 units

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**USING YOUR MATH** - For the problems on this page, set up a ratio and then convert it to an equivalent fraction with a denominator of 100. You will not need to simplify any fractions first.

2. In a 50-gram portion of cereal, 8 grams of it are sugar. Which of the following represents the percent of the 50-grams that is sugar?

(1) 4%                              (3) 16%

(2) 8%                              (4) 24%

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3. If 7 out of 10 people brush their teeth every night, which of the following represents the percent of people who do not brush their teeth every night?

(1) 7%                              (3) 35%

(2) 30%                             (4) 70%

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4. In Mr. Ford's class, 3 out of 25 students are left-handed. Which of the following is the percent of left-handers in Mr. Ford's class?

(1) 3%                              (3) 12%

(2) 6%                              (4) 25%

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5. In a survey, 12 out of 20 people said they liked chocolate better than vanilla ice cream. What percent of people liked chocolate better?

(1) 12%                             (3) 48%

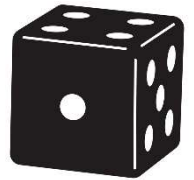
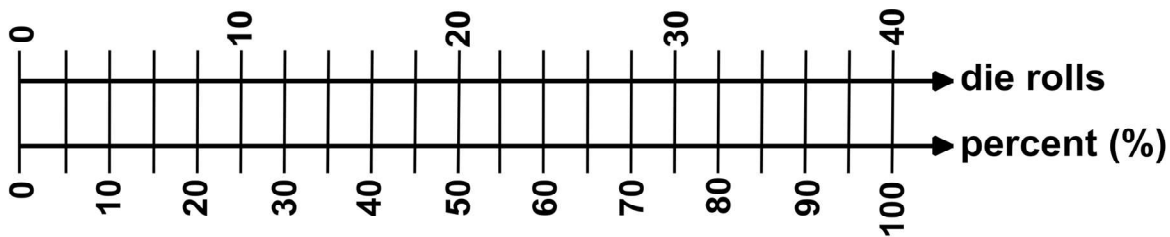
(2) 24%                             (4) 60%

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For the percent problems on this page you may have to reduce your ratio first before converting it to one with a denominator of 100.

6. Of 60 corn seeds that were planted, 18 of them did not sprout. What percent of the corn seeds did not sprout? Show how you arrived at your answer.
  
7. On a field trip, 24 out of 75 students decided to bring their backpacks. What percent of the students brought their backpacks? Show how you arrived at your answer.
  
8. Laura rolls a standard six-sided die 40 times and records the number of times each number comes up. Label the top number line more fully and then answer the questions.



- (a) If Laura rolls the number four 12 times, what percent of her rolls were 4's?
- (b) If 75% of Laura's throws had numbers greater than 2, how many of Laura's throws had numbers greater than 2?
- (c) If 18 of the rolls were even numbers, what percent of the rolls were even?
- (d) If 15% of Laura's rolls were ones, how many ones did she roll?

## REVIEWING YOUR MATH

9. Find each of the following. Show the calculation you use to find the answer.
  - (a)  $\frac{2}{3}$  of 24
  - (b)  $\frac{7}{10}$  of 50
  - (c)  $\frac{15}{100}$  of 300

