

Name: _____ Date: _____

Student Exploration: Fraction, Decimal, Percent

Vocabulary: decimal, decimal point, equivalent, fraction, percent

Prior Knowledge Questions (Do these BEFORE using the Gizmo.)

Claire, Ron, Mabel, and Larry all took the same test. Here's how they did:

Claire: "I got 75 out of 100 questions correct." Ron: "I got $\frac{8}{10}$ of the questions correct."

Mabel: "I got 0.80 of the questions correct." Larry: "I got a score of 83% on the test."

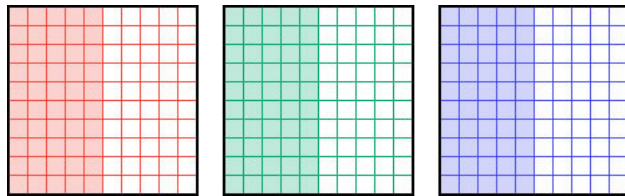
1. Who did best on the test? _____ Why do you say so? _____

2. Who did worst on the test? _____ Why do you say so? _____

Gizmo Warm-up

Numbers can be represented as **fractions**, **decimals**, or **percents**. The *Fraction, Decimal, Percent Gizmo™* lets you compare these, for values between 0 and 1.

Each model in the Gizmo represents one whole. To change the models, either click on them, use the up and down arrow keys, or type a number in the text field and hit **Enter** on your keyboard.




Set the first (red) model to **Fraction (hundredths)**, the second (green) to **Decimal (hundredths)**, and the third (blue) to **Percent**. Shade half of each model, as shown above.

1. What fraction is modeled in the first (red) model? _____

What is this fraction in simplified form? _____

2. What decimal is modeled in the second (green) model? _____

3. What percent is modeled in the third (blue) model? _____

Activity A: Equivalent numbers	<u>Get the Gizmo ready:</u> <ul style="list-style-type: none"> • Click Reset. • Set the first model to Fractions (tenths). • Set the second model to Decimals (tenths). 	<div style="border: 1px solid black; padding: 2px;"> Fraction (tenths)  </div>
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Claire, Ron, Mabel, and Larry wonder if any of their scores were **equivalent** (equal in value).

1. To begin exploring this, set the first (red) model to $\frac{3}{10}$. Then shade the second model to match the first. What decimal is equivalent to the fraction $\frac{3}{10}$? _____

2. Set the first model to **Fraction (hundredths)** and the second model to **Decimal (hundredths)**. Shade 47 squares in the first model and 47 in the second model.

A. What fraction is represented in the first model? _____

B. What equivalent decimal is represented in the second model? _____

3. Write decimals that are equivalent to fractions below. Use the Gizmo to check your answers.

$$\frac{2}{10} = \underline{\hspace{2cm}} \quad \frac{2}{100} = \underline{\hspace{2cm}} \quad \frac{6}{10} = \underline{\hspace{2cm}} \quad \frac{60}{100} = \underline{\hspace{2cm}}$$

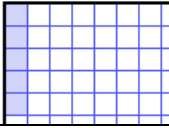
4. Write the fractions that are equivalent to each of the following decimals. If the fraction can be simplified, show the simplified form too. Use the Gizmo to check your answers.

$$0.7 = \underline{\hspace{2cm}} \quad 0.4 = \underline{\hspace{2cm}} \quad 0.89 = \underline{\hspace{2cm}} \quad 0.25 = \underline{\hspace{2cm}}$$

5. In general, how do you convert a fraction to an equivalent decimal? _____

6. Claire got the right answer on 75 of 100 questions. Eight tenths ($\frac{8}{10}$) of Ron's answers were correct, 0.80 of Mabel's answers were correct, and 83% of Larry's answers were correct.

Which two students got equivalent test scores? _____

Activity B: Comparing numbers	<u>Get the Gizmo ready:</u> <ul style="list-style-type: none"> • Set the first model to Fraction (hundredths). • Set the second model to Decimal (hundredths). • Set the third model to Percent. 	<div style="border: 1px solid black; padding: 2px;">Percent</div> 
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Mabel and Larry are arguing about who got the higher score on the test. Larry's score was 83%, and Mabel got 0.80 of her answers correct. How can you compare these numbers?

- To practice comparing fractions, decimals and percents, shade 57 out of 100 squares on all 3 models in the Gizmo. This models three equivalent values. Then fill in the equation below.

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}\%$$

- Click **Reset**, and set the first model to **Fraction (tenths)**. Shade 8 out of 10 squares in this model. Then shade the other two models so that the same total area is shaded on each. Fill in the equation below with the equivalent fraction, decimal, and percent.


$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}\%$$

- The table below shows the test scores of Claire, Ron, Mabel, and Larry. Fill in all the blank spaces in the table so you can compare their scores. Use the Gizmo to check your answers.

Name	Fraction (reduced)	Fraction	Decimal	Percent
Claire		$\frac{75}{100}$		
Ron		$\frac{8}{10}$		
Mabel			0.80	
Larry				83%

- Based on this table of results, who did best on the test? _____

How do you know? _____

Activity C: More comparisons	<u>Get the Gizmo ready:</u> <ul style="list-style-type: none"> • Set the first model to Fraction (tenths). • Set the second model to Decimal (hundredths). • Set the third model to Percent. 	number line 
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To compare fractions, decimals, and percents, it helps to convert them all to the same form.

1. In the Gizmo, model a fraction, a decimal, and a percent. Each number should be different.

- A. What fraction did you model? _____
- B. What decimal did you model? _____
- C. What percent did you model? _____

2. Convert the fraction and percent to decimals. What do you get? _____, _____

Check your answers by setting all three models to **Decimal (hundredths)**.

3. Write your three original numbers (the fraction, decimal, and percent) in order from least to greatest below. Use a “less than” symbol (<) or an equals sign (=) between the numbers.

Check your answer by turning on **Show number line** and **Show comparison**.

4. Put each set of numbers below in order from least to greatest. Fill in a < or = between the numbers. Use the Gizmo to check your answers. (The last “challenge” set cannot be checked with the Gizmo.)

A. $\frac{75}{100}$, 83%, 0.80 _____

B. $\frac{1}{10}$, 0.09, 8% _____

C. 2%, $\frac{2}{100}$, 0.2 _____

D. $\frac{1}{4}$, 0.4, 40% _____

E. $2\frac{7}{10}$, 2.07, 127% _____ (Challenge)