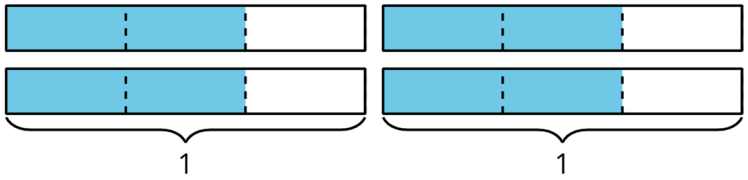
Let's Do Some Math Notice and Wonder	

Standards Unpacking		
Key	**Standard**	**Prerequisites/Vocabulary**
Put a box around the conceptual component of the standard. Underline the procedural/fluency component of the standard. Put a cloud around the application component of the standard.	**4.NF.4-** Multiply a fraction by a whole number. (Denominators are limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	What prior knowledge should my students have? What vocabulary/ notation should students know for this standard?
	4.NF.4a- Understand a fraction *a*/*b* as a multiple of 1/*b*. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).*	What prior knowledge should my students have? What vocabulary/ notation should students know for this standard?
	4.NF.4c- Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*	What prior knowledge should my students have? What vocabulary/ notation should students know for this standard?

Standards Unpacking		
Key	**Standard**	**Prerequisites/Vocabulary**
Put a box around the conceptual component of the standard. Underline the procedural/fluency component of the standard. Put a cloud around the application component of the standard.	**4.NF.5-** Express a fraction with denominator 10 as an equivalent fraction with denominator 100 and use this technique to add two fractions with respective denominators 10 and 100. *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.* ***(Clarification: Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.)*	What prior knowledge should my students have? What vocabulary/ notation should students know for this standard?
	4.NF.6- Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram*; *represent 62/100 of a dollar as $0.62.*	What prior knowledge should my students have? What vocabulary/ notation should students know for this standard?
	4.NF.7- Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	What prior knowledge should my students have? What vocabulary/ notation should students know for this standard? What vocabulary/ notation should students know for this standard?

Part A

Mia's family has an orchard with fruit trees. Of those trees, $\frac{6}{10}$ are apple trees.

How many hundredths is equivalent to $\frac{6}{10}$?

Enter your answer in the box.

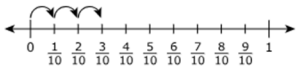
Part B

In the orchard, $\frac{16}{100}$ of the trees are pear trees.

What fraction of the trees in the orchard are apple trees or pear trees?

Enter your answer as a fraction in the boxes.

A number line model is shown.



Select the **two** expressions that are represented by the number line model.

- ☐ A. $3+\frac{1}{10}$
- ☐ B. $3\times\frac{1}{10}$
- ☐ C. $\frac{3}{10}+\frac{1}{10}$
- ☐ D. $\frac{3}{10}\times\frac{1}{10}$
- ☐ E. $\frac{1}{10}+\frac{1}{10}+\frac{1}{10}$
- ☐ F. $\frac{1}{10}+\frac{2}{10}+\frac{3}{10}$

Part A

Mia's family has an orchard with fruit trees. Of those trees, $\frac{6}{10}$ are apple trees.

How many hundredths is equivalent to $\frac{6}{10}$?

Enter your answer in the box.

Part B

In the orchard, $\frac{16}{100}$ of the trees are pear trees.

What fraction of the trees in the orchard are apple trees or pear trees?

Enter your answer as a fraction in the boxes.

Which comparisons are correct?

Select the **three** correct answers.

- ☐ A. $3.71 < 3.8$
- ☐ B. $9.50 > 9.5$
- ☐ C. $17.01 = 17.1$
- ☐ D. $20.62 < 20.8$
- ☐ E. $56.34 > 56.4$
- ☐ F. $78.4 = 78.40$

Which expression shows how to find the value of $2 \times \frac{3}{4}$?

- ○ A. $\frac{2+3}{4}$
- ○ B. $\frac{2\times3}{4}$
- ○ C. $\frac{3}{2+4}$
- ○ D. $\frac{3}{2\times4}$

A student uses tubes of paint to draw on 1 poster and 2 shirts.

- The student uses 6 tubes of paint to draw on the poster.
- The number of tubes used for the poster is 3 times the number of tubes used for each shirt.
- Each tube contains $\frac{1}{3}$ ounce of paint.

How many ounces of paint does the student use for 1 shirt? How many ounces of paint does the student use to make 1 poster and 2 shirts? Show your work or explain your answers.

What is the decimal form of each fraction?

Drag and drop the correct decimal form into the box below each fraction.

0.8	0.9	0.08	0.09	0.008	0.009

Fraction Form	$\frac{9}{100}$	$\frac{8}{10}$
Decimal Form		

A plant grew $\frac{3}{10}$ meter in April and $\frac{27}{100}$ meter in May. Which expression can be used to find the total amount the plant grew during the two months?

- ○ A. $\frac{3}{10}+\frac{27}{10}$
- ○ B. $\frac{30}{10}+\frac{27}{10}$
- ○ C. $\frac{3}{100}+\frac{27}{100}$
- ○ D. $\frac{30}{100}+\frac{27}{100}$

Directions: Complete the following SOLVE problem with your teacher. You will only complete the S step.

Mrs. Thompson is baking cookies for the soccer team bake sale. The team is having the sale to raise money for new uniforms. Each batch of cookies she bakes needs $\frac{3}{4}$ of a cup of brown sugar. If she makes 6 batches of cookies, how many cups of brown sugar will she need?

S Underline the question.
This problem is asking me to find _____

_____.

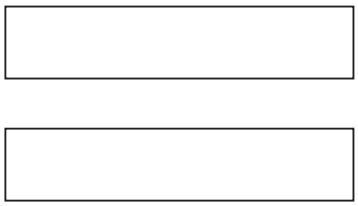
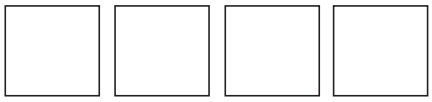
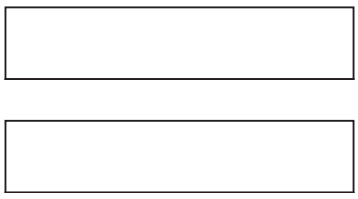
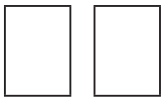
Directions: Complete this page with your teacher and partner. Simplify all answers.

Problem	Meaning
1. $3 \bullet \frac{1}{6} =$	
2. $\frac{2}{3} \bullet 2 =$	
3. $2 \bullet \frac{1}{4} =$	
4. $\frac{1}{2} \bullet 4 =$	

Directions: Complete this page with your teacher and partner. Simplify all answers.

Problem	Meaning	Model
1. $\frac{1}{4} \bullet 2 =$		
2. $3 \bullet \frac{1}{4} =$		
3. $\frac{1}{3} \bullet 2 =$		
4. $4 \bullet \frac{1}{6} =$		

Directions: Complete this page with your teacher and partner. Simplify all answers.

Problem	Meaning	Model
1. $\frac{1}{2} \bullet 2 =$		
2. $4 \bullet \frac{1}{4} =$		
3. $\frac{1}{6} \bullet 2 =$		
4. $2 \bullet \frac{1}{6} =$		

Look at Problem 1: $\frac{1}{2} \bullet 2$. Work with a partner to figure out how you can solve this problem numerically without the pictures. Write your solution.

How would Problem 2 be solved numerically?

Expression a Product as an Equivalent Product with a Unit Fraction

1. What does $2 \times \frac{3}{8}$ mean? Use your fraction tiles and groups to model it.
2. Model $2 \times \frac{3}{8}$ using a visual model.

Use the model to fill in the blanks.

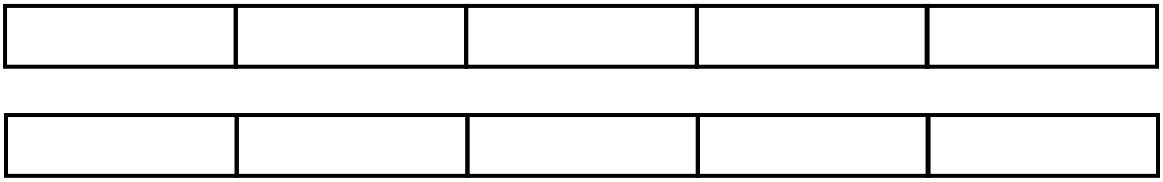
a. _____ groups of $\frac{3}{8}$ is the same as _____ groups of $\frac{1}{8}$.

b. $2 \times \frac{3}{8} = \_\_\_ \times \frac{1}{8}$.

c. One eighth or $\frac{1}{8}$ is a unit fraction because it represents 1 part of all the equal parts of the whole. All products can be written as a _____ times a _____ fraction.

3. What does $3 \times \frac{2}{5}$ mean? Use your fraction tiles and groups to model it.

a. Model $3 \times \frac{2}{5}$ using a visual model.



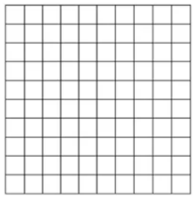
b. _____ groups of $\frac{2}{5}$ is the same as _____ groups of $\frac{1}{\_\_}$.

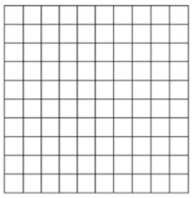
c. $3 \times \frac{2}{5} = \_\_\_ \times \frac{1}{\_\_}$.

4. How could you express $4 \times \frac{5}{6}$ as the product of a whole number and a unit fraction? Create a model and justify your answer.

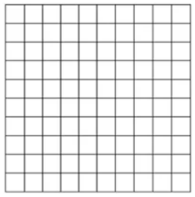
$4 \times \frac{5}{6} = \_\_\_ \times \frac{1}{\_\_}$

Meaning of Tools

		
What is the relationship between each block?		

If the value of  is 1…

…what is the value of  ?	…what is the value of  ?
What is the relationship between each block?	

		
What is the relationship between each block?		

The decimal point separates the whole number from the _____ part of the number.

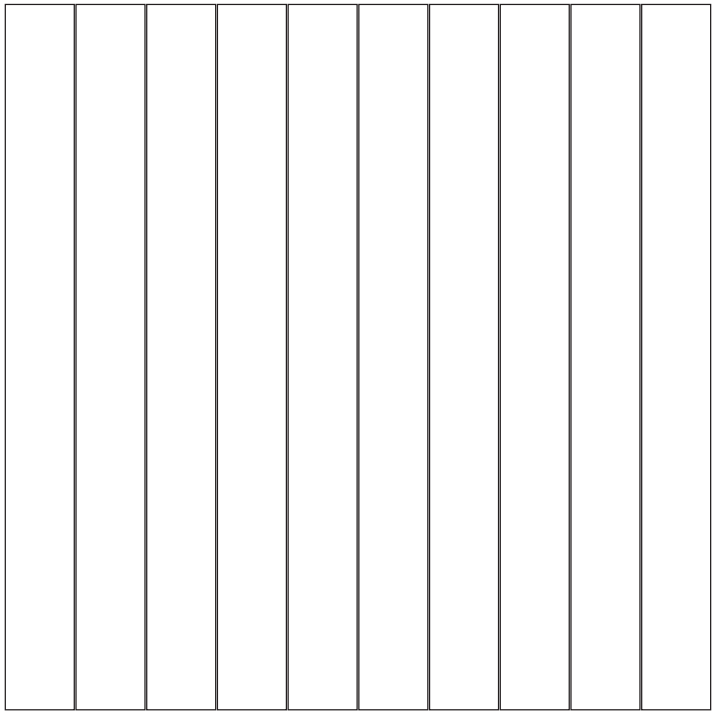
Directions: Complete the following SOLVE problem with your teacher. You will only complete the S step.

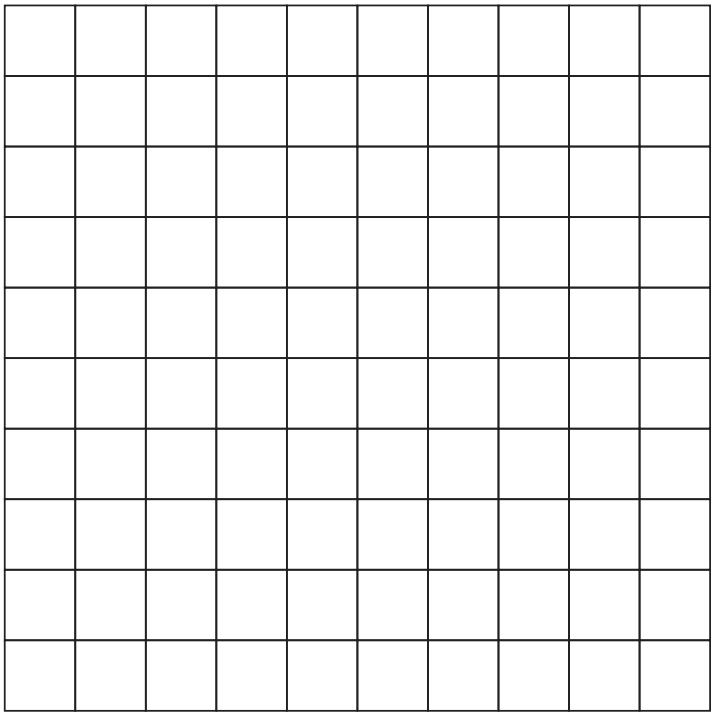
For her class, Tina records the distance a ball rolls off a ramp. The first time she rolls the ball, it travels $\frac{2}{10}$ of a meter. The second time, she raises the ramp, and the ball rolls $\frac{62}{100}$ of a meter. What is the total distance the ball rolled in the two trials? Express your answer as a decimal.

S Underline the question.
This problem is asking me to find _____

_____.

Directions: Complete this page with your teacher and partner.



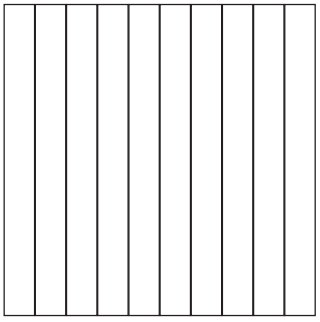
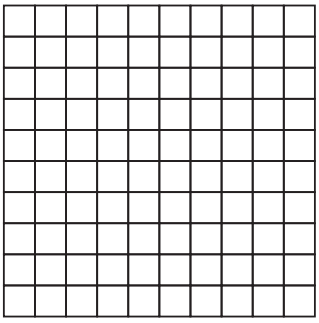
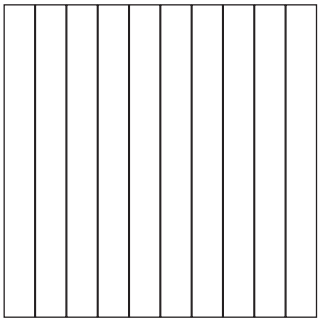
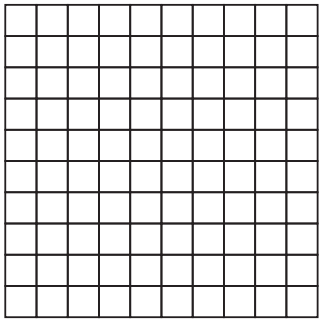
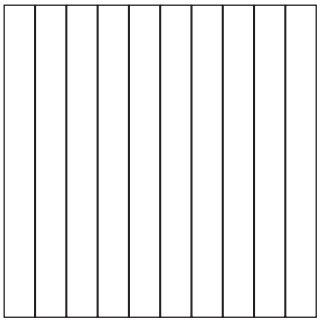
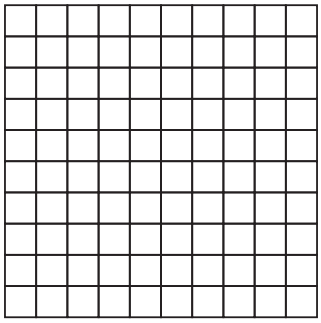
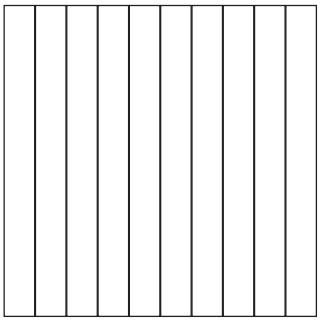
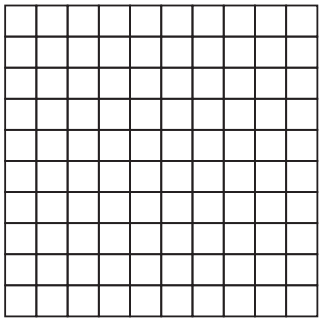


LESSON 21: Fraction and Decimal Equivalence

Directions: Complete this page with your teacher and partner.

1. Using only one color of centimeter cubes, make three separate groups of ten and connect them together in one vertical line.	
2. Place each group of ten on a vertical strip in the chart on the left side of page S199.	
3. How many of the vertical strips are covered by the centimeter cubes?	
4. What fraction can be used to represent the area that is covered?	
5. Slide the centimeter cubes from Step 2 to the chart on the right side of page S199.	
6. How many squares are covered?	
7. What fraction can we write to represent the area of the second chart covered by centimeter cubes?	
8. The number of centimeter cubes used for both charts didn't change. What can we conclude about the fraction we created in Question 4 and the fraction we created in Question 7?	
9. Make the fraction $\frac{2}{10}$ using centimeter cubes. Write the equivalent fraction below. $\frac{2}{10} = \frac{\quad}{100}$	
10. Make the fraction $\frac{5}{10}$ using centimeter cubes. Write the equivalent fraction below. $\frac{5}{10} = \frac{\quad}{100}$	

Directions: Complete this page with your teacher and partner.

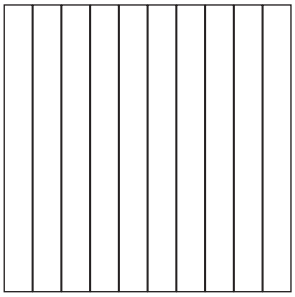
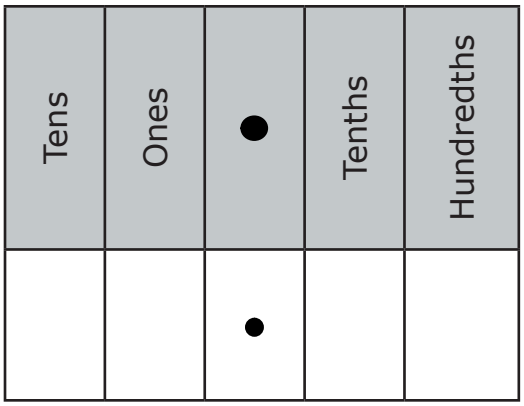
FRACTION	TENTHS	HUNDREDTHS	EQUIVALENT FRACTIONS
1. $\frac{3}{10}$			$\frac{3}{10} = \frac{\quad}{100}$
2. $\frac{7}{10}$			$\frac{7}{10} = \frac{\quad}{100}$
3. $\frac{9}{10}$			$\frac{9}{10} = \frac{\quad}{100}$
4. $\frac{4}{10}$			$\frac{4}{10} = \frac{\quad}{100}$

LESSON 21: Fraction and Decimal Equivalence

Directions: Complete this page with your teacher and partner.

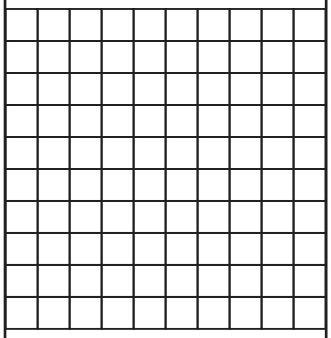
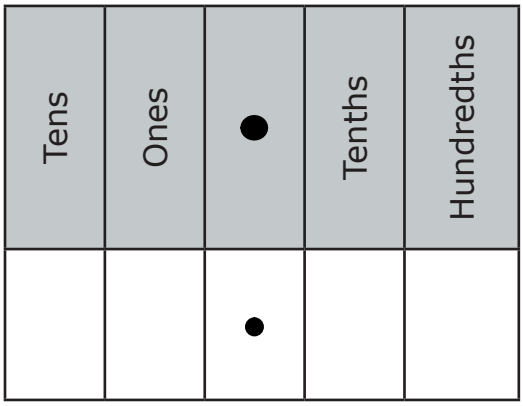
Another way to represent a fraction is to change it into a decimal.

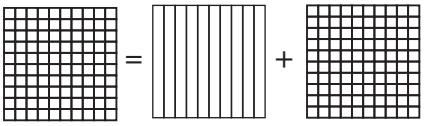
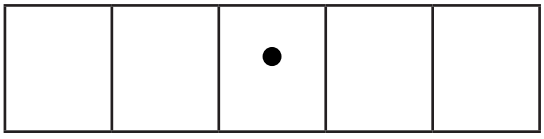
In the first part of our lesson, we discussed how to represent fractions using our tenths and hundredths squares. Now, let's transfer our knowledge of these fractions to decimals using the place value chart.

Fraction	Tenths	Written Words	Place Value Chart
$\frac{3}{10}$			

Step 1:	Let's start with the fraction $\frac{3}{10}$.	Shade the appropriate number of bars in the second column.
Step 2:	Write the fraction in words.	
Step 3:	How many tenths do we have?	
Step 4:	Write the decimal using the place value house.	

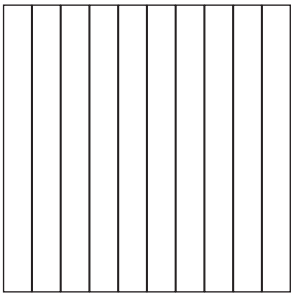
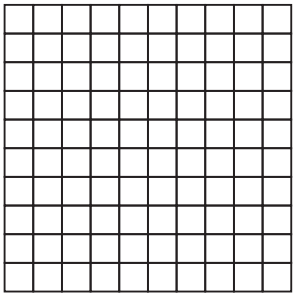
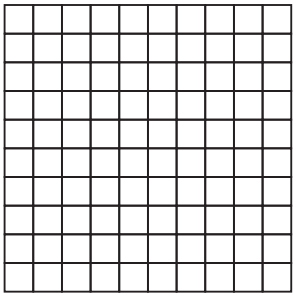
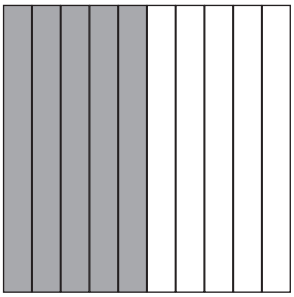
Directions: Complete this page with your teacher and partner.

Fraction	Hundredths	Written Words	Place Value Chart
$\frac{32}{100}$			

Step 1:	Let's look at the fraction $\frac{32}{100}$.	Shade the appropriate number of sections in the grid in the second column.
Step 2:	Write the fraction in words.	
Step 3:	How many hundredths do we have?	
Step 4:	When we break down $\frac{32}{100}$, we see that it is made up of _____ tenths and ___ hundredths.	
Step 5:	Place the number of tenths under the "tenths" column and the number of hundredths under the "hundredths" column.	
Step 6 :	Write the decimal using the place value house.	

LESSON 21: Fraction and Decimal Equivalence

Directions: Complete this page with your teacher and partner. In each row, you are given a number in the form of a fraction, shading, written words, or a decimal. Use the piece of information given to complete the three other blocks.

Fraction	Tenths or Hundredths Grid	Written Words	Place Value Chart
1. $\frac{8}{10}$			Ones ● Tenths Hundredths ●
2.			Ones ● Tenths Hundredths 0 ● 0 7
3.		forty-nine hundredths	Ones ● Tenths Hundredths ●
4.			Ones ● Tenths Hundredths ●

Directions: Complete the following SOLVE problem with your teacher. You will only complete the S step.

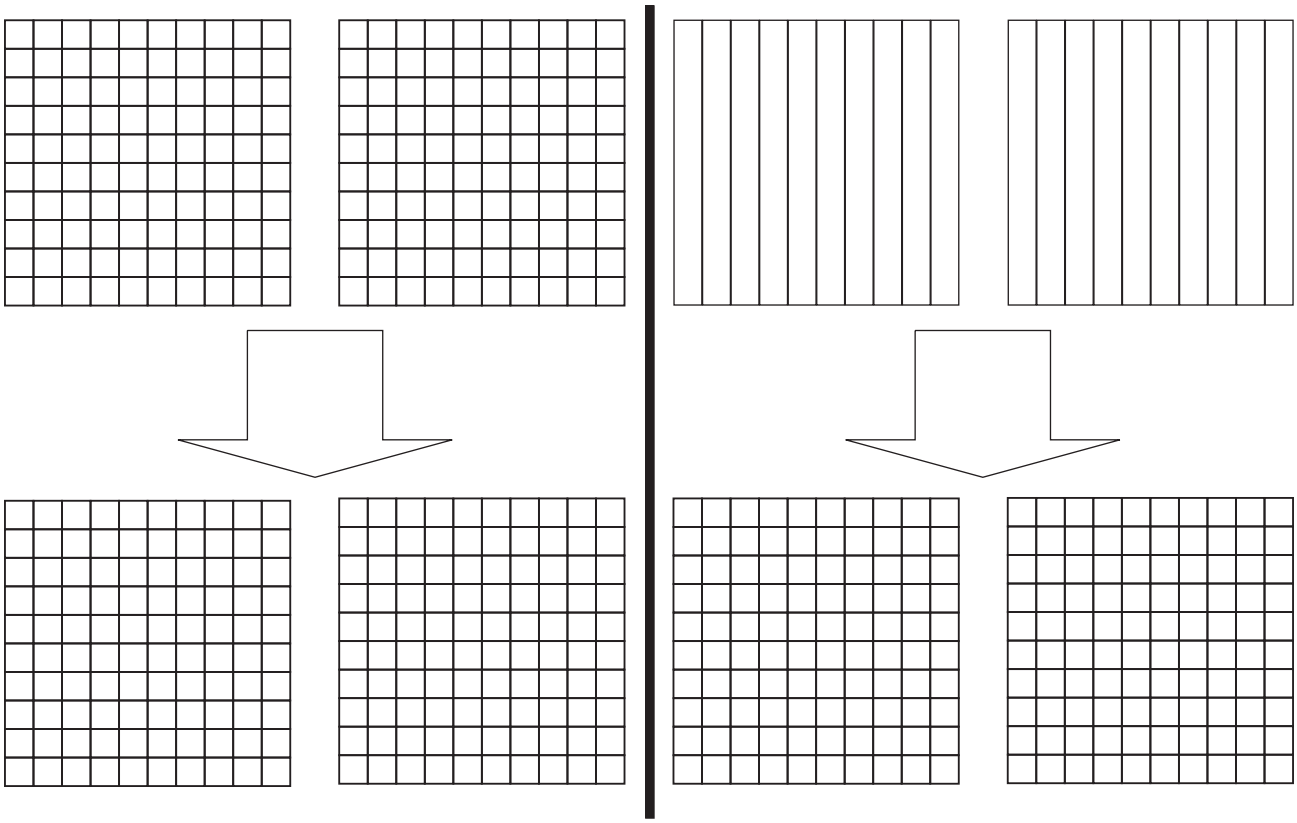
Maria tries to save money when she purchases gasoline for her car. She spent the same amount of money at two gas stations. At Fill–er–Fuel, she bought 3.57 gallons of fuel, and at Quik–E–Fuel she bought 3.65 gallons of fuel. Which gas station should Maria visit again for the best deal?

S Underline the question.
This problem is asking me to find _____

_____.

Directions: Complete this page with your teacher and partner.

1.25 ◯ 1.3



Decimal Duels Rules

How to Play:

1. With your partner, cut out the 10 cards that are provided and place them in a pile face down.

2. The game is played in five rounds. In each round, each partner will take one card from the top of the pile of cards. At the top of each game block on pages S214 and S215, each partner will write his/her decimal on the blank lines.

3. Each player will then represent his/her decimal by shading in the appropriate squares in the hundredths grids.

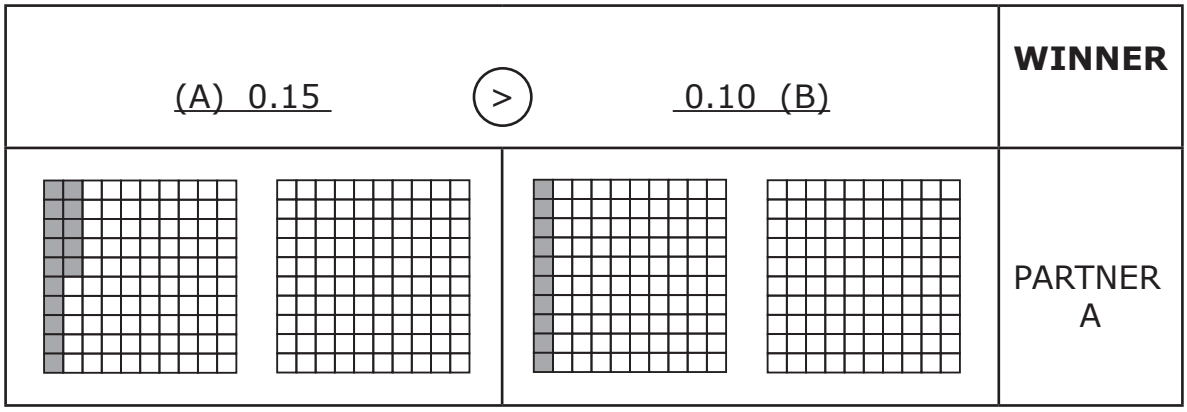
4. Together, the players will compare the decimals to see whose is greater. They will then place a >, <, or = symbol in the circle at the top of the game block.

5. The partner who has the greater decimal number will write his/her name in the "Winner" column.

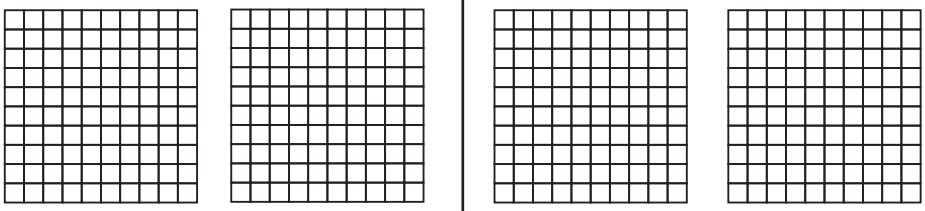
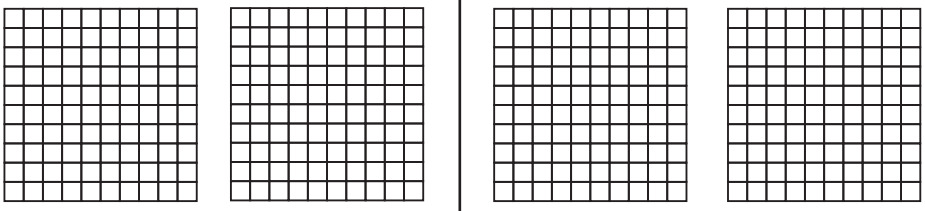
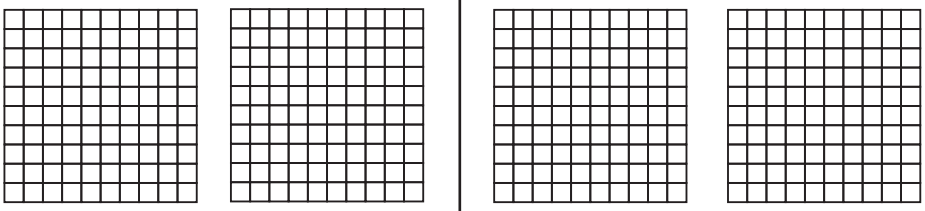
6. If the players' decimals are equal in value, simply place an = sign in the circle and place an "X" in the "Winner" column for that game block.

7. At the end of all five rounds, find the total number of wins per partner. The partner with the most wins will win the game. In the event of a tie because a statement contained an equal symbol, all cards should be shuffled and placed back in a pile. Each player will pick one card from the top of the pile, and one final duel will take place in the extra game block.

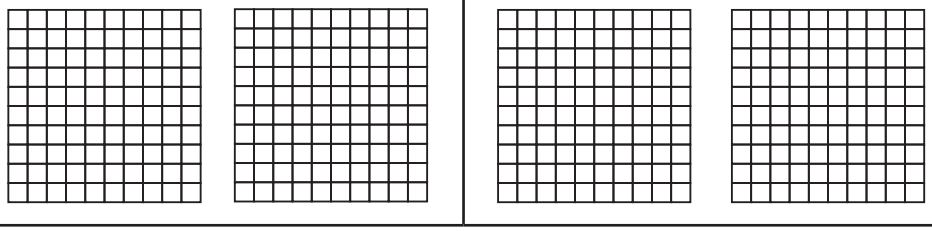
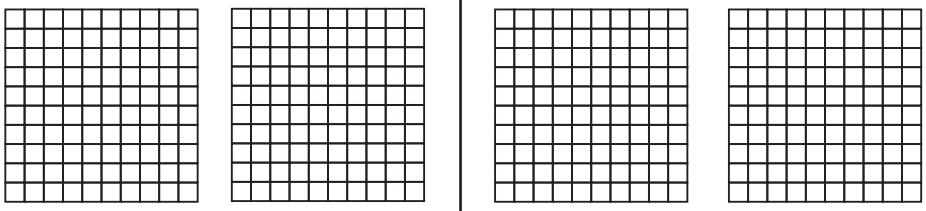
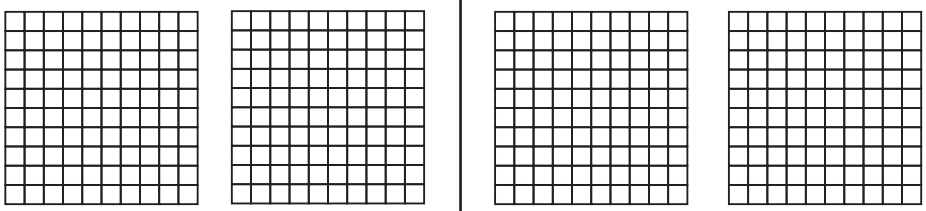
See the example game block below.



Decimal Duels

_____ ◯ _____	**WINNER**
	
_____ ◯ _____	**WINNER**
	
_____ ◯ _____	**WINNER**
	

Decimal Duels

_____ ○ _____	**WINNER**
	
_____ ○ _____	**WINNER**
	
_____ ○ _____	**WINNER**
	

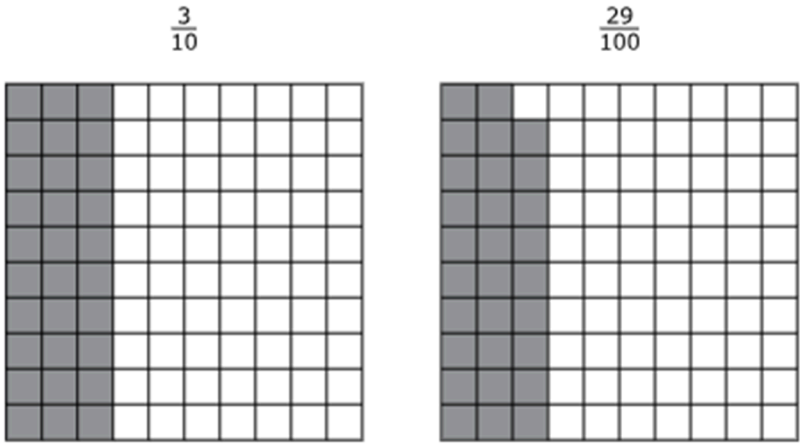
Understanding Reasoning Questions Use this sheet as a reflection tool to support the understanding of the evidence statement around the reasoning questions. After you engage/learn about the questions, use the tool to make notes around your takeaways and implement ideas.	
Current Unit Topics:	
	Evidence Statement for Reasoning
What Content Standards Are Addressed in This Evidence Statement from the Current Unit?	
Takeaways About the Statement – What Do Students Need to Be Able to Do	
What Should Be Evident in a Student Response	

What Type of Reasoning	
Explain	**Identify the Error**

Reasoning Question – 4.C.4-5

Used from: NJ Released Questions – 4.C.4-5– Decimals- VF643125

Jessica shades two grids that each one equal one whole to represent and compare fractions $\frac{3}{10}$ and $\frac{29}{100}$.



Part A: If you had to drag and drop the decimal that represents $\frac{3}{10}$ and the decimal that represents $\frac{29}{100}$ into each box to create a true comparison, what would it be?

Choices: 0.03, 0.3, 3.1, 0.29, 0.92, 2.9

☐ < ☐

Part B: Jessica says that $\frac{3}{10} + \frac{29}{100} = \frac{32}{100}$ because 3 + 29 = 32 and there are 100 squares in each of the grids. Explain how you know Jessica is incorrect by using the grids or the decimal inequality you created. Then find the correct sum. Explain your explanation.