

FDP Battle – Teacher Notes
Three task activity on fractions/decimals/percents

Student Expectation:

8.1A The student is expected to compare and order rational numbers in various forms including integers, percents, and positive and negative fractions and decimals

Essential Questions:

1. How can models (such as pictures) of fractions, decimals, and percents, represent the value of rational numbers?
2. How can knowing the value of a fraction, decimal, or percent, help to put it in order from least to greatest or greatest to least?

Total approximated time: 90 minutes depending on student prior understanding of equivalent representation of fractions, decimals, and percents – two forty-five minute classes

Room Set Up:

Each pair students gets a deck of cards and a Task Card with student direction. Every student gets their own SRS and will need the map colors or pencils for Task 3. Hold the TAKS problems to distribute at the end of the lesson during the summary section so that the students connect the activity to its application on TAKS items.

Materials:

FDP Cards for each pair of students – 12 sets of 4 cards – each set has a fraction/equivalent fraction/percent/and decimal	TASK Cards (student direction page) for each pair
	Map colors or pencils to shade SRS
Student Recording Sheet for each student (SRS)	TAKS Questions Student Page

TASK 1 – Students sort the cards into equivalent groups - 30 minutes:

1. Ask the essential question #1 (posted on the front board) to the students. This will focus the activity that you will be doing today.
2. Teacher models the task by demonstrating with the four $\frac{1}{2}$ cards (.5, $\frac{1}{2}$, 50%, $\frac{2}{4}$) by place the four cards on the document projector and ask the students, “What do you notice about those four cards? How are they alike? How are they different?” Discuss the different types of cards focusing on the relationships between the different representations of the same quantity. Vocabulary emphasis: Equivalent
 - ➔ Each set of four cards will include one each of the following type of cards: a fraction, the model of the equivalent fraction, the decimal equivalent, and the percent equivalent.
 - ➔ Each deck of cards has 48 cards, which is 12 sets of four equivalent cards.
3. Question to guide discussion: “How could we prove the amounts are equal?” (Answers may include to draw models for each – or – use money examples such as fifty cents, $\frac{1}{2}$ dollar, two quarters, and 50 out of a 100 pennies – connecting the money example to the four cards modeled on the document projector.
4. Teacher explains that the students will find the remaining 11 sets of equivalent amounts.
5. Students will sort the deck of cards into equivalent piles by placing cards, which represent the same quantity, together. Circulate to ensure that both students are participating. Ask the students what strategy that they are using to sort the cards.
6. As the students sort the cards, circulate through the groups and ask prompting questions such as:
 - ➔ What does the denominator on this card represent? Numerator?
 - ➔ Let’s find an easy benchmark fraction like $\frac{1}{4}$ to get us started (struggling groups – just question them to find one set and then move on to another group) – What is the decimal that represents $\frac{1}{4}$? What is the percent that represents $\frac{1}{4}$? Okay, if we doubled the 1 and the 4 – we would still have an equivalent fraction – do you see a $\frac{2}{8}$?
 - ➔ How do you know what decimal goes with that set of fractions?
 - ➔ What other ways did you use to figure the equivalent fractions? Will doubling help?
7. Please note: Students may think that they have completed Task 1 – but unless there are four cards in each pile, they have not finished. Students may claim their deck is missing cards or is messed up. However, they may have misplaced cards based on their perception of what is equivalent rather than understanding the representation of each amount. For example, students confuse (1.0 with 0.1)

8. Resist the urge to put the cards in groups for the students. It is through the struggling to get the cards in their appropriate set that the students will have GREAT conversation about fractions/decimals and percents. Help struggling students by directing their attention to the model cards.
9. Be prepared to help them by asking them about doubling strategy – to find the equivalent fraction. Then follow up by asking them if the fraction is bigger because the numerator and denominator were doubled. Frequently the students will demonstrate their misunderstanding by claiming that the equivalent fraction is larger because the numbers are larger – use the models on the equivalent fraction to help with the understanding.

TASK 2 – Students place the sets in order from least to greatest – 15 minutes:

1. With the pair of students ready to move to Task 2 - Draw attention to Essential Question #2: Now that we know the value of the sets of fractions, we can put them in order from least to greatest.
2. **Resist the urge to tell them to put all the percentages on top** in order to order them first (or the decimals) because it is amazing that they will come to this strategy themselves, naturally in order to speed up the process. This is a fine strategy that transfers to TAKS!

Running out of time note:

If the class is a 45 minute period – stop the students 10 minutes before the end of the period and have them record on the recording sheet the sets of cards that they already have sorted. Collect the recording sheets and the teams can work on the sheet – shading the models – at the beginning of the class together.

TASK 3 – Students record order onto recording sheet and shade the models – 15 minutes:

1. Students should then transfer their order onto the SRS and shade the lower part of the page according.
2. They will be able to refer to the number line during the play of the game as a key.
3. Encourage struggling students to use the pictorial models, or benchmark numbers such as $\frac{1}{2}$ to help them order the fractions and decimals.

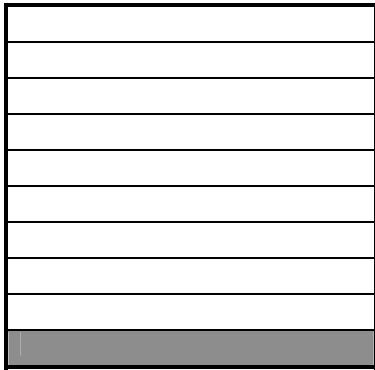
TASK 4 Students play FDP Battle – 20 minutes:

1. Students should then play battle with the fraction cards.
 - ➔ Remind students to use the sentence strip as a key in case they are not sure which fraction or decimal is larger
 - ➔ Directions for battle are on the student tasks card
 - ➔ Question students about how they know that the fraction is larger, smaller, etc.

Summary/Victory Lap – 10 minutes:

1. Revisit essential questions and encourage students to think about models and values of numbers, just as they did in the card activities, as they work on TAKS items which ask them to put numbers in order from least to greatest or greatest to least.
2. As teacher distributes the TAKS items for the students to complete individually, again remind the students to use the “same thinking you did to place the cards in order from least to greatest and to play the game” on these TAKS items.
3. Students should work individually to complete the TAKS questions.

0.1

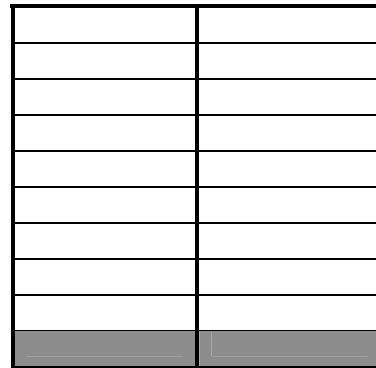


0.1

10%

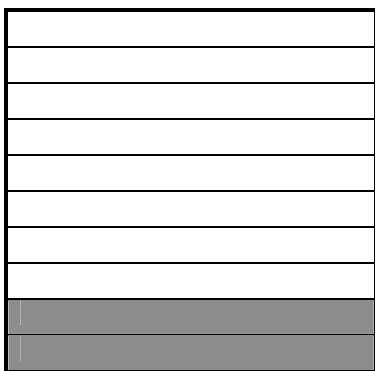
$\frac{1}{10}$

Two-twentieths



Two-twentieths

Two-tenths



Two-tenths

$\frac{1}{5}$

0.2

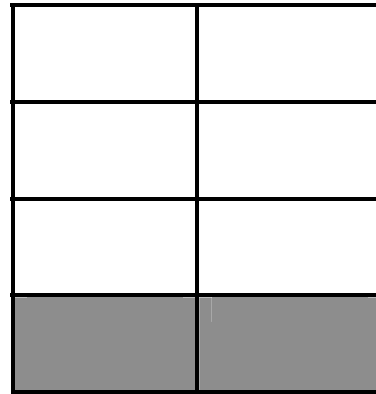


0.2

20%

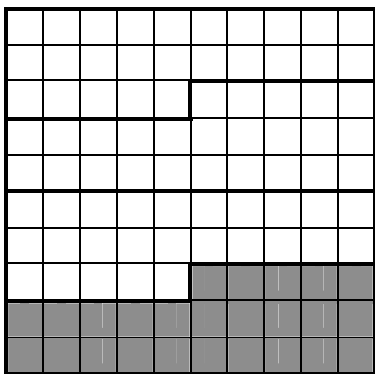
$\frac{1}{4}$

Two-eighths



Two-eighths

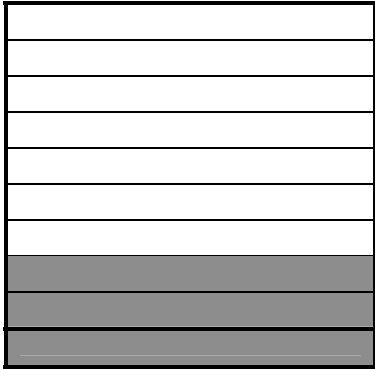
0.25



0.25

25%

0.3

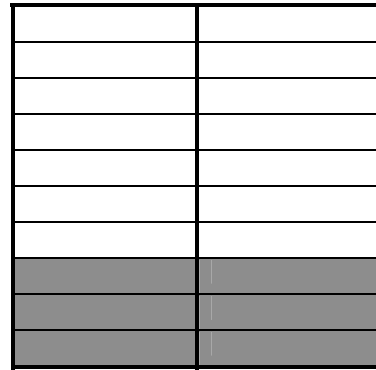


0.3

30%

$\frac{3}{10}$

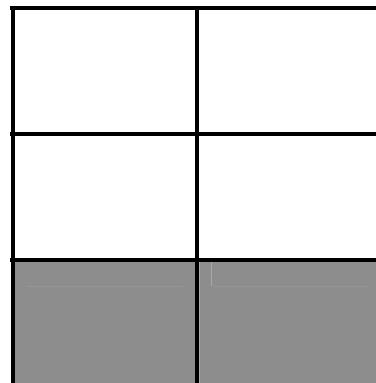
Six-twentieths



Six-twentieths

$\frac{1}{3}$

Two-sixths

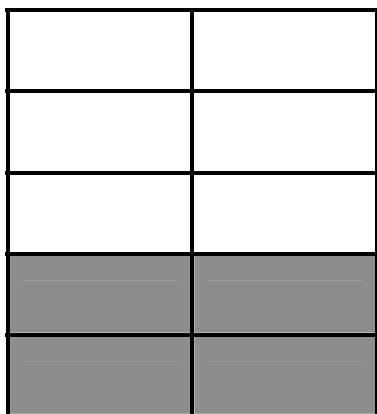


Two-sixths

$0.\overline{33}$

$33\frac{1}{3}\%$

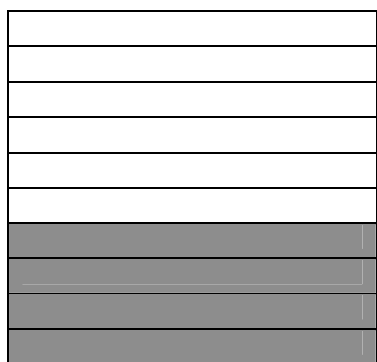
Four-tenths



Four-tenths

$\frac{2}{5}$

0.4



0.4

40%

0.5

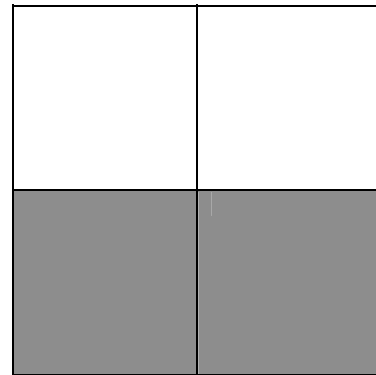


0.5

50%

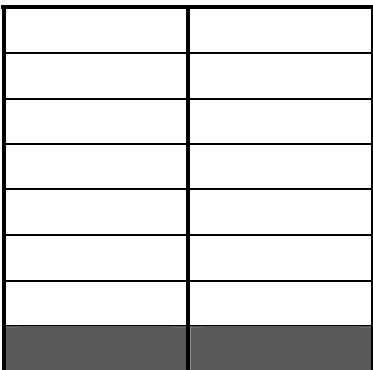
$\frac{1}{2}$

Two-fourths



Two-fourths

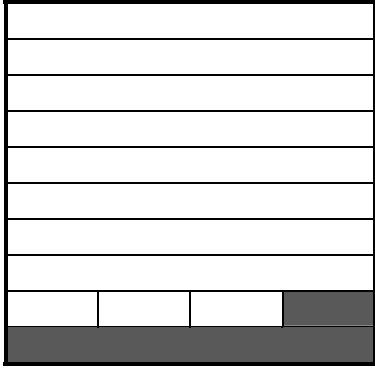
Two-Sixteenths



Two - Sixteenths

$\frac{1}{8}$

0.125

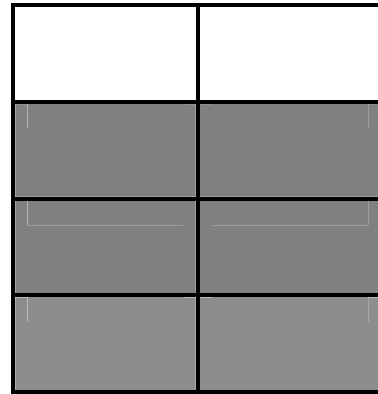


0.125

12.5%

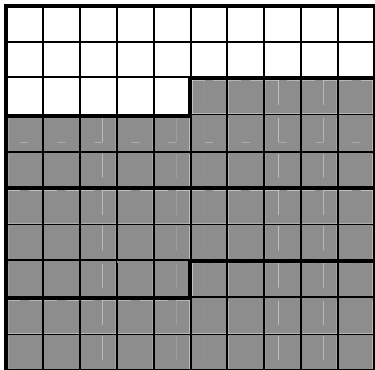
$\frac{3}{4}$

Six-eighths



Six-eighths

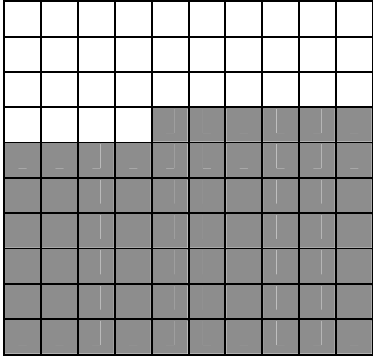
0.75



0.75

75%

0.66

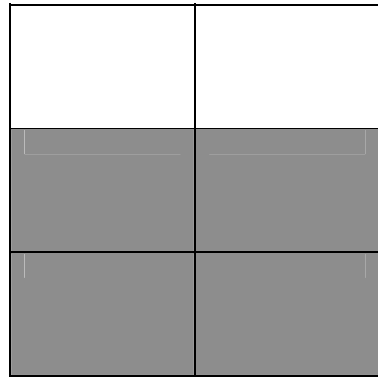


0.66

$66\frac{2}{3}\%$

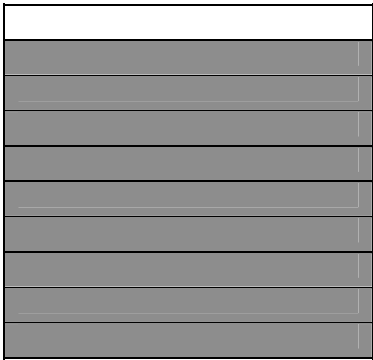
$\frac{2}{3}$

Four-sixths



Four-sixths

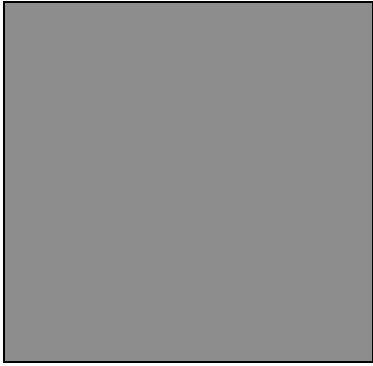
0.9



0.9

90%

1.0



1.0

100%

1

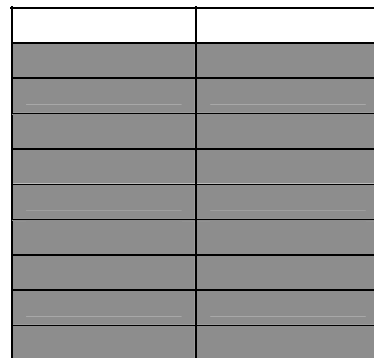
Ten-tenths



Ten-tenths

$\frac{9}{10}$

Eighteen-twentieths



Eighteen-twentieths

Name _____ Date _____

Directions: Use the FDP cards to complete the table below. The first set has been done as an example.

Least $\xrightarrow{\hspace{15em}}$ Greatest

Fraction	$\frac{1}{10}$											
Decimal	0.1											
Percent	10%											
Equivalent Fraction	$\frac{2}{20}$											
Symbolic Representation												
Model												

Rational Numbers:

Fractions, Decimals, Percents! Battle

Task 1:

1. Sort the cards into equivalent sets of 4 cards. (There are 12 sets.)
2. Check that each set has one of each type of card:
 - simplified fraction
 - decimal
 - percent
 - equivalent fraction card with a model representation.

Task 2:

Arrange your card sets in order from least to greatest. What is a fast way to do this?

Task 3:

1. Record the fractions, decimals, and percents, in order from least to greatest in the table on the recording sheet.
2. Shade the model to represent each rational number. You may use the table as an answer key while you are playing the Battle Game. This will help you remember that $\frac{1}{2}$ is larger than $\frac{1}{4}$.

Task 4:

Shuffle all of the cards together and play Fraction Decimal Percent Battle using the Game Rules below. What cards are winning cards to have in your stack?

Game Rules

Deal out the cards evenly so that each player has the same number of cards. Turn the stack over and don't look. Each player turns the top card over. The player with the highest value wins both cards. If you are not sure which is larger, use your answer key from Task 3 to help you. If the amounts on the cards are equivalent, the players turn over three more cards face down and a fourth one face up (Battle) to see who has the highest value of the fourth card. The winner takes all the cards in that round. Continue the play until someone has all the cards.

16 Amy, Jasmine, Katrina, and Myra each walked from their houses to the mall. Amy walked $\frac{1}{2}$ mile, Jasmine walked $\frac{1}{4}$ mile, Katrina walked $\frac{3}{4}$ mile, and Myra walked $\frac{5}{8}$ mile. Which list shows these distances in order from greatest to least?

F $\frac{1}{2}$ mi, $\frac{1}{4}$ mi, $\frac{3}{4}$ mi, $\frac{5}{8}$ mi

G $\frac{3}{4}$ mi, $\frac{5}{8}$ mi, $\frac{1}{2}$ mi, $\frac{1}{4}$ mi

H $\frac{1}{4}$ mi, $\frac{1}{2}$ mi, $\frac{5}{8}$ mi, $\frac{3}{4}$ mi

J $\frac{5}{8}$ mi, $\frac{3}{4}$ mi, $\frac{1}{4}$ mi, $\frac{1}{2}$ mi

31 Which statement about the mixed number $1\frac{1}{3}$ is true?

A $1\frac{3}{10} > 1\frac{1}{3}$

B $2 < 1\frac{1}{3}$

C $1\frac{1}{3} > 1\frac{3}{10}$

D $1\frac{1}{3} < 1\frac{1}{4}$

37 For lunch Henry bought a $\frac{1}{4}$ -pound hamburger with 0.15 pound of cheese and 0.032 pound of onions. Which set shows these amounts correctly ordered from least to greatest?

A

0.032	0.15	$\frac{1}{4}$
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B

0.15	$\frac{1}{4}$	0.032
------	---------------	-------

C

0.032	$\frac{1}{4}$	0.15
-------	---------------	------

D

$\frac{1}{4}$	0.15	0.032
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