



## Activity Overview

In this activity, students explore numbers and number representations for fractions, decimals, and percents. Then they use a number line to compare and order numbers.

## Topic: Numbers and Operations

- Understanding numbers, representing numbers, and understanding relationships among numbers.
- Comparing and ordering fractions, decimals, and percents.
- Using a number line to compare and order numbers

## Teacher Preparation and Notes

- Before beginning the activity, students should clear all lists and turn off functions. To clear the lists, press  $\boxed{2\text{nd}} \boxed{[\text{CATALOG}]}$  and scroll down until **ClrAllLists** is highlighted. Press  $\boxed{[\text{ENTER}]}$  twice. Or press  $\boxed{2\text{nd}} \boxed{[\text{MEM}]}$  and select **4:ClrAllLists**. To clear any functions, press  $\boxed{[\text{Y=}]}$ , then press  $\boxed{[\text{CLEAR}]}$  when the cursor is next to Y1 through Y0.
- Students should have prior experience with converting decimals, fractions, and percents.
- Enter the seven values as shown in Part 1 into L1. To enter fractions use the  $\boxed{[\text{ALPHA}]} \boxed{[\text{F1}]}$  to access the shortcut menus.
- **To download the student worksheet, go to [education.ti.com/exchange/ofdp](http://education.ti.com/exchange/ofdp)**

NORMAL FLOAT AUTO REAL RADIAN MP					
L1	L2	L3	L4	L5	2
$\frac{2}{3}$	.66667	-----	-----	-----	
.6	$\frac{3}{5}$				
.75	$\frac{3}{4}$				
$\frac{3}{4}$	.75				
.245	$\frac{49}{200}$				

L2 = { .666666666666667,  $\frac{3}{5}$ ,  $\frac{3}{4}$ , .7

This activity utilizes MathPrint™ functionality and includes screen captures taken from the TI-84 Plus C Silver Edition. It is also appropriate for use with the TI-83 Plus, TI-84 Plus, and TI-84 Plus Silver Edition but slight variances may be found within the directions.

### Compatible Devices:

- TI-84 Plus Family
- TI-84 Plus C Silver Edition

### Associated Materials:

- Ordering\_Fraction\_Decimals\_Percents\_Student.pdf
- Ordering\_Fraction\_Decimals\_Percents\_Student.doc

### Tech Tips:

- Access free tutorials at <http://education.ti.com/calculators/pd/US/Online-Learning/Tutorials>
- Any required calculator files can be distributed to students via handheld-to-handheld transfer.

**Part 1 – Ordering Fractions and Decimals**

Question 1

Select seven students and assign each one of the numbers in the list below. They should write this on a piece of paper or give them a sticky note with the number on it.

$$\frac{2}{3} \quad 0.6 \quad 0.75 \quad \frac{3}{4} \quad 0.245 \quad 0.25 \quad \frac{1}{3}$$

Have the students come to the front of the class and order themselves from least to greatest. Enter the list of data into L1. To enter the fractions, use  $\boxed{\text{ALPHA}} \boxed{[F1]}$  and select the correct fraction template. After all students feel the list is in order from least to greatest, use the **SortA**( command on the Home screen to sort the list in ascending order.

The key presses on the Home screen are  $\boxed{\text{STAT}} \boxed{2} \boxed{2\text{nd}} \boxed{[L1]} \boxed{)} \boxed{\text{ENTER}}$ . Then, look at the list again by pressing  $\boxed{\text{STAT}}$  and selecting **1:Edit...** and the list will be in ascending order.

NORMAL FLOAT AUTO REAL RADIAN MP					
L1	L2	L3	L4	L5	1
$\frac{2}{3}$	-----	-----	-----	-----	
.6					
.75					
$\frac{3}{4}$					
.245					
.25					
$\frac{1}{3}$					
-----					

$L1 = \left\{ \frac{2}{3}, .6, .75, \frac{3}{4}, .245, .25, \frac{1}{3} \right\}$

NORMAL FLOAT AUTO REAL RADIAN MP					
SortA(L1)					
..... Done .....					

Question 2

Students may just look at the fractions and decimals and convert each to see if there is an equivalent.

To use the technology, students could convert **L1** from fractions (or decimals) to decimals (or fractions) and then store in **L2** in order to compare.

To convert the list and store it in L2, press  $\boxed{\text{STAT}}$  and select **1:Edit...** Arrow over to the top of L2. Press  $\boxed{2\text{nd}} \boxed{[L1]} \boxed{\text{ALPHA}} \boxed{[F1]} \boxed{4} \boxed{\text{ENTER}}$ . L2 will display the fraction or decimal equivalents of the values in L1

Here students can see that 0.75 and  $\frac{3}{4}$  are equivalent.

NORMAL FLOAT AUTO REAL RADIAN MP					
L1	L2	L3	L4	L5	2
$\frac{2}{3}$	-----	-----	-----	-----	
.6					
.75					
$\frac{3}{4}$					
.245					
.25					
$\frac{1}{3}$					
-----					

$L2 = L1 \blacktriangleright F \blacktriangleleft \blacktriangleright D$

NORMAL FLOAT AUTO REAL RADIAN MP					
L1	L2	L3	L4	L5	2
$\frac{2}{3}$	.66667	-----	-----	-----	
.6	$\frac{3}{5}$				
.75	$\frac{3}{4}$				
$\frac{3}{4}$	.75				
.245	$\frac{49}{200}$				

$L2 = \left\{ .666666666666667, \frac{3}{5}, \frac{3}{4}, .7 \right\}$

### Part 2 – Fraction Challenge

Allow students to challenge each other to find fractions between two given decimals.

Arrange students in pairs. One partner will pick two decimals. The other partner will then write a fraction that is between the two decimals.

Do this for 2 (or more) sets of decimals and fractions. Then have the partners switch roles. Repeat for 2 more sets of numbers.

After at least 4 sets of numbers have been generated, students enter them into a list, such as **L1**, in order from least to greatest.

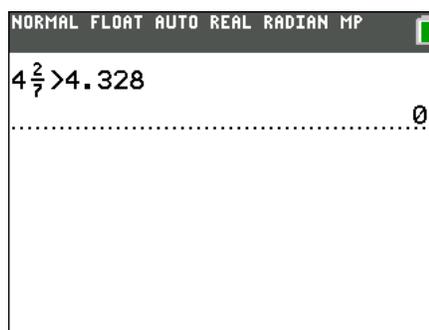
**Note:** If students want to clear existing lists, press  $\boxed{2^{nd}} \boxed{MEM} \boxed{4} \boxed{ENTER}$ .



### Part 3 – Solve a Similarity Problem

Students can solve these true/false statements in other ways as well. This method is showing them the Boolean tests that will likely prove useful in future mathematics studies. The **<** and **>** symbols can be entered using the **Test** menu ( $\boxed{2^{nd}} \boxed{TEST}$ ).

Key presses for Exercise 10 are  $\boxed{ALPHA} \boxed{F1} \boxed{2}$ , enter the first number  $\boxed{4} \blacktriangleright \boxed{2} \blacktriangleright \boxed{7} \boxed{2^{nd}} \boxed{MATH}$ . Then scroll to **>**,  $\boxed{ENTER}$ . Enter the second number  $\boxed{4} \boxed{.} \boxed{3} \boxed{2} \boxed{8}$  and press  $\boxed{ENTER}$ .



**Note:** The calculator returns either 0 or 1 for Boolean test, true or false. True = 1 and False = 0.

**Note:** On the TI-84, percents must be entered as a decimal or a fraction.



### Solutions to Student Worksheet

#### Part 1

1. Which is the greatest element in the list?

**Answer: 0.75 or  $\frac{3}{4}$**

Which is the least element in the list?

**Answer: 0.245**

2. Are any of the numbers in the list equal? How do you know? Write the answer.

**Answer: 0.75 or  $\frac{3}{4}$**

#### Part 2

3. Write the pair of decimals your partner creates. Find a fraction *between* the decimals

**Answer: Answers will vary. Check students' work.**

4. Write the pair of decimals for your partner and the fraction he or she chooses.

**Answer: Answers will vary. Check students' work.**

5. Enter the 4 sets of decimals and fractions into list **L2** from least to greatest. Write the new *ordered* list.

**Answer: Answers will vary. Check students' work.**

#### Part 3

6.  $4\frac{2}{7} > 4.328$  **Answer: False**

7.  $2.787 < 2\frac{8}{11}$  **Answer: False**

8.  $\frac{19}{6} < 3\frac{1}{3}$  **Answer: True**

9.  $75\% < \frac{5}{8}$  **Answer: False**

10.  $0.387 < 40\%$  **Answer: True**

11.  $-\frac{7}{9} < -\frac{8}{11}$  **Answer: True**

12. Draw a number line and place the 12 numbers from Exercises 6 – 11 on it.

