

## ACTIVITY 2

### Materials:

- fraction cards
- tape
- string
- activity master

# Fraction Number Line

**Overview:** If you want to build number sense with fractions, if you want to help students see the connections between fractions, decimals, and percents – if you want to generate rich mathematical discussion – then this quick and easy activity is for you. Use it as a planned activity, a warmup, or a quick filler.

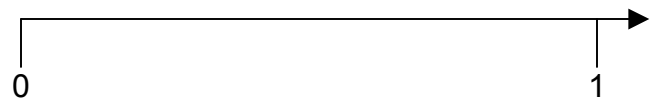
**Vocabulary:** numerator, denominator, greater than, less than, reciprocal

## PROCEDURE

### Skills:

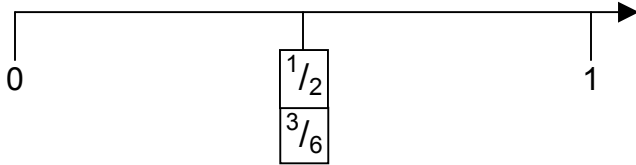
- Comparing fractions
- Ordering fractions
- Simplifying fractions
- Finding equivalent fractions
- Understanding reciprocals

- 1 You will need to draw a number line on the board. It should run the length of the entire board. It should only include the numbers zero and one as shown:



- 2 Give each student a card from the simplified fraction set in the appendix. (You can copy these onto card stock to make them more durable.) Each student can come to the board and tape his or her fraction where it should go. You may wish to have them do this one at a time, in small groups, or as a whole class. Students should be able to explain their reasoning for the placement. Ask other students if they agree with a card's location and have them explain why. If you wish, students can write their names on the cards before hanging the cards.
- 3 For example, let's assume  $\frac{1}{4}$  and  $\frac{1}{3}$  have been placed on the number line. The next student has to place  $\frac{1}{5}$  on the line. He or she might use common denominators to determine that  $\frac{1}{5}$  is the smallest of the three. On the other hand, the student could reason that larger denominators mean a whole has been cut into smaller parts, so the one fifth is smaller than the one fourth or the one third. The student might use division to convert the fractions to decimals or use percent equivalents to tell that the fifth was the smallest. Encouraging students to look at fractions in multiple ways will foster conceptual fraction sense students need.

- 4 Once students have completed this task, they are ready for the equivalent fraction cards. There are two ways to present this activity. The first is to pass out the cards from this set as before. The second is to mix these cards with the simplified set. This will allow students to see the equivalency of the fractions as shown here:




- 5 The third activity that can be done with the cards involves the decimal cards. Again these may be presented individually or mixed with the fraction cards to show equivalency. Both approaches are conceptually rich, and doing the activity one way does not preclude doing it the other.

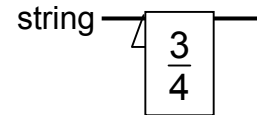
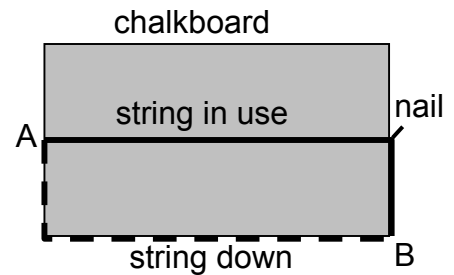
- 6 Lastly, mix the percent cards with the decimal and fraction cards so students will become familiar with all three forms of part/whole notation.

- 7 This activity is most powerful if experienced periodically throughout the year. More learning and more retention will occur that way. If you would like to make it easier to use this activity on a regular basis, consider putting up a permanent number line. To do this, run a string from a nail or tack on one side of your chalkboard (A) to the other, over another nail, and down to the tray (B) as shown. Fasten it there with a third nail. When you want to remove the number line, unhook it from the nail and run it under the tray as shown by the dotted line. Each fraction card has a dashed line indicating where to fold it backward so it can be hung on such a string.

- 8 Two blank masters are included to make cards of your own. You can also use 3 x 5 index cards or sticky notes.

**Good Tip!** 

You can play a variation of the card game, “War,” by using the cards. Give pairs of students a set of cards and let them play against another pair of students. Each team lays a card face up and the team with the greater fraction wins both cards. In the event the cards have equal values, an additional card is played.





### Journal Prompts:



Put these three fractions in order from least to greatest. Explain your reasoning.

$$\frac{3}{5} \qquad \frac{7}{10} \qquad \frac{6}{11}$$

The fractions  $\frac{1}{4}$  and  $\frac{2}{5}$  have been placed on the number line. What fraction might go in between them? How do you know?

### Homework:



You can use the enclosed activity master for homework, or assign a page from a text or workbook.

### Taking a Closer Look:



Include mixed numbers and improper fractions. Or ask students to place the reciprocals of their cards on the number line.

### Assessment:



This activity can be checked as the students are putting up their cards. You can also check them by converting all the cards to decimals. If you assign the homework master, use the following key to check it.

### Answer Key:

Set 1:

$$\frac{1}{4} \qquad \frac{3}{8} \qquad \frac{1}{2} \qquad \frac{3}{4} \qquad \frac{5}{6}$$

Set 2:

$$\frac{1}{4} = \frac{2}{8} \qquad \frac{7}{12} \qquad \frac{9}{15} = \frac{3}{5} \qquad \frac{2}{3}$$

Set 3:

$$\frac{1}{2} \qquad \frac{2}{3} \qquad \frac{3}{4} \qquad \frac{4}{5} \qquad \frac{5}{6}$$

Set 4:

$$\frac{1}{5} = .2 \qquad \frac{1}{4} \qquad 30\% \qquad \frac{1}{3} \qquad .35$$

Set 5:

$$.5\% \qquad .05 \qquad \frac{1}{10} \qquad \frac{1}{4} \qquad 50\% \qquad 100\%$$

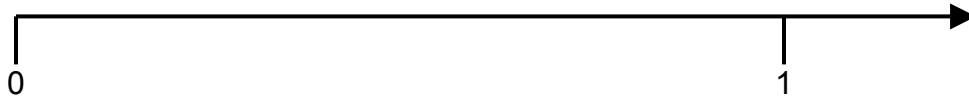
Activity master

# Number Line Fractions

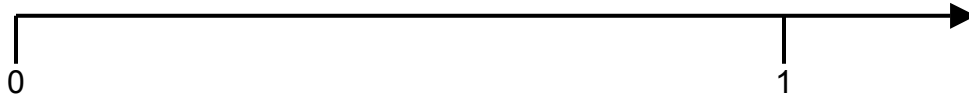
Name \_\_\_\_\_

Put the following fractions, decimals or percents on their number lines in the correct locations.

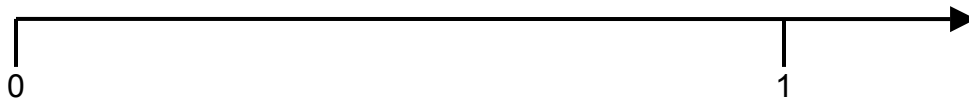
Set 1:       $\frac{3}{8}$        $\frac{5}{6}$        $\frac{1}{4}$        $\frac{1}{2}$        $\frac{3}{4}$



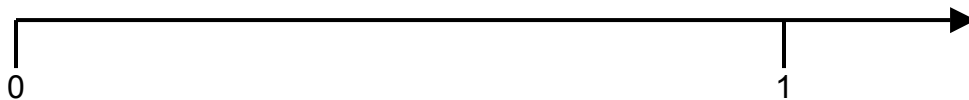
Set 2:       $\frac{2}{8}$        $\frac{2}{3}$        $\frac{9}{15}$        $\frac{7}{12}$        $\frac{1}{4}$        $\frac{3}{5}$



Set 3:       $\frac{3}{4}$        $\frac{2}{3}$        $\frac{1}{2}$        $\frac{5}{6}$        $\frac{4}{5}$



Set 4:       $\frac{1}{3}$        $\frac{1}{5}$        $.2$        $\frac{1}{4}$        $30\%$        $.35$



Set 5:       $100\%$        $.05$        $\frac{1}{10}$        $50\%$        $.5\%$        $\frac{1}{4}$

