

DECIMAL REPRESENTATION AND OPERATIONS

6

Name: Key

Date: _____

Period: _____

SECTION 6.1 DECIMALS

Big Idea: How can we compare and order decimals on a number line? How do we add and subtract decimals?

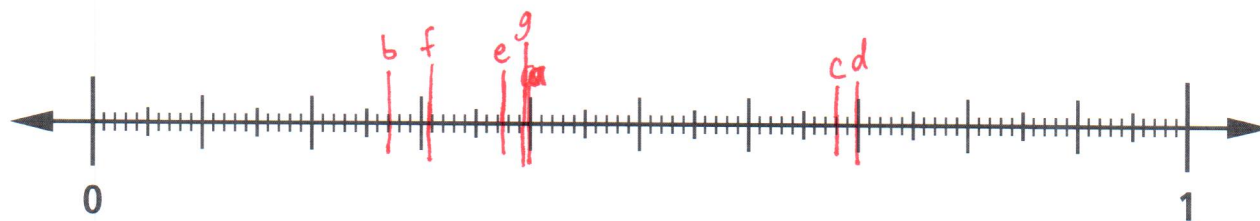
EXPLORATION: LOCATING DECIMALS ON A NUMBER LINE

If we think of 1 on the number line as \$1.00, where would we locate half a dollar, or \$0.50? Because there are 10 dimes in a dollar, where would \$0.10 be located on the number line? \$0.20? \$0.30? Can you locate \$0.01, or more simply 0.01, on the number line, knowing that there are 10 pennies in a dime?

We know when we write 0.30 that there is another way that this decimal can be written. Thirty cents, or thirty hundredths, can be written as 0.3. How could you show that the two numbers are really equivalent to each other on the number line? We know three dimes, or 0.3, has the same value as 30 pennies, or 0.30.

1. Use a number line like the one below to estimate the locations of the following decimal numbers. Notice that 0 and 1 are labeled on the number line.

- a. 0.4 c. 0.68 e. 0.374 g. 0.397
- b. 0.27 d. 0.7 f. 0.307



2. In your groups, discuss how you compare decimals, or how to determine which decimals are greater. List ways to compare decimals.

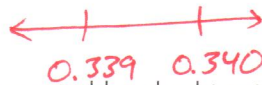
(Answers will vary.) Compare by place value, locate on numberline and compare locations.

3. For each pair of numbers, determine which is greater. Insert the proper inequality sign (< or >) in the box. Justify your answer using the number line.

a. $0.68 \boxed{<} 0.7$



b. $0.34 \boxed{>} 0.339$



c. $0.268 \boxed{<} 0.271$



4. In your groups, discuss how you add and subtract decimals. List ways to add and subtract decimals.

Answers may vary.

Line up decimals, look at place value, estimate then find error, break into parts.

5. Compute the following using one of the methods your group discussed.

a. $0.2 + 0.06$

$$\begin{array}{r} 0.20 \\ + 0.06 \\ \hline 0.26 \end{array}$$

c. $0.23 + 0.54$

$$\begin{array}{r} \approx 0.25 + 0.55 \\ \approx 0.8 \\ 0.23 \\ + 0.54 \\ \hline 0.77 \end{array}$$

e. $0.63 - 0.47$

$$\begin{array}{r} 0.63 \\ - 0.47 \\ \hline 0.16 \end{array}$$

b. $0.38 + 0.47$

$$\begin{array}{r} 38 \text{ hundredths} \\ + 47 \text{ hundredths} \\ \hline 85 \text{ hundredths} \\ = 0.85 \end{array}$$

d. $0.26 + 0.31$

$$\begin{array}{r} 0.26 \\ + 0.31 \\ \hline 0.57 \end{array}$$

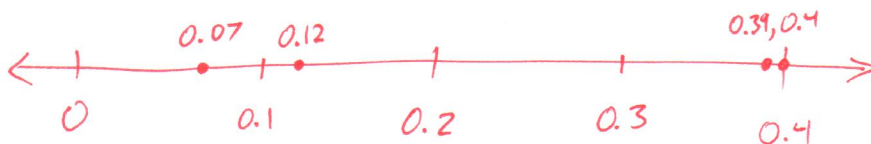
f. $0.2 - 0.06$

$$\begin{array}{r} 0.20 \\ - 0.06 \\ \hline 0.14 \end{array}$$

PRACTICE EXERCISES

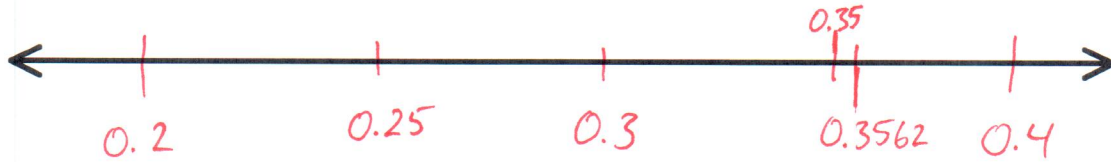
1. Order the following four numbers by locating them on a number line. Scale your number line appropriately.

0.4, 0.07, 0.39, 0.12

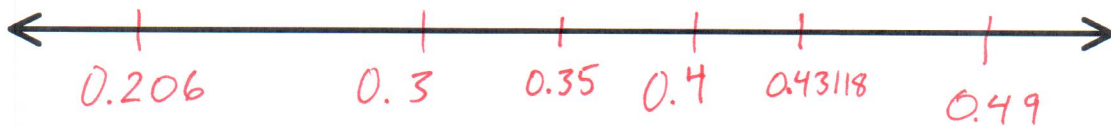


2. While working each of the following exercises, be careful to scale your number line appropriately.

a. Draw and label 0.2 and 0.4 on a number line. Plot and name 4 additional points between these two points.



b. Draw and label 0.49 and 0.206 on a number line. Plot and name 4 additional points between these two points.



4. Compute the following.

a. $0.23 + 0.56 = 0.79$

$$\begin{array}{r} 0.23 \\ + 0.56 \\ \hline 0.79 \end{array}$$

c. $1.304 + 1.02$

$$\begin{array}{r} 1.304 \\ + 1.020 \\ \hline 2.324 \end{array}$$

e. $2.75 - 0.36$

$$\begin{array}{r} 2.75 \\ - 0.36 \\ \hline 2.39 \end{array}$$

b. $0.9 + 0.58$

$$\begin{array}{r} 0.90 \\ + 0.58 \\ \hline 1.48 \end{array}$$

d. $0.67 - 0.34$

$$\begin{array}{r} 0.67 \\ - 0.34 \\ \hline 0.33 \end{array}$$

f. $4.163 - 1.58$

$$\begin{array}{r} 4.163 \\ - 1.580 \\ \hline 2.583 \end{array}$$

5. Determine which of the following pairs of numbers is closer together. Explain.

a. 0.6 and 0.7

or

0.21 and 0.29

$$\begin{array}{r} 0.70 \\ - 0.60 \\ \hline 0.10 \text{ apart} \\ (\text{or } 0.1 \text{ apart}) \end{array}$$

$$\begin{array}{r} 0.29 \\ - 0.21 \\ \hline 0.08 \text{ apart} \end{array}$$

b. 0.36 and 0.43

or

0.681 and 0.704

$$\begin{array}{r} 0.43 \\ - 0.36 \\ \hline 0.07 \text{ apart} \end{array}$$

$$\begin{array}{r} 0.704 \\ - 0.681 \\ \hline 0.023 \text{ apart} \end{array}$$

6. Solve the following equations

a. $x + 1.23 = 4.71$

$$x + 1.23 - 1.23 = 4.71 - 1.23$$

$$x = 4.71 - 1.23$$

$$x = 3.48$$

$$\begin{array}{r} 4.71 \\ - 1.23 \\ \hline 3.48 \end{array}$$

b. $y - 0.28 = 15.4$

$$y - 0.28 + 0.28 = 15.4 + 0.28$$

$$y = 15.4 + 0.28$$

$$y = 15.68$$

$$\begin{array}{r} 15.40 \\ + 0.28 \\ \hline 15.68 \end{array}$$

7. Simplify the following expressions

a. $1.2y + 0.7y$

$$(1.2 + 0.7)y =$$

$$\boxed{1.9y}$$

$$\begin{array}{r} 1.2 \\ +0.7 \\ \hline 1.9 \end{array}$$

b. $0.7t - 0.52t$

$$(0.7 - 0.52)t =$$

$$\boxed{0.18t}$$

$$\begin{array}{r} 0.70 \\ -0.52 \\ \hline 0.18 \end{array}$$

8. Claudia is making punch for her Quinceañera. She buys a 1-gallon jug of lemonade concentrate and uses 0.45 gallons of it. How much lemonade concentrate is left in the jug?

$$1 - 0.45$$

$$\begin{array}{r} 1.00 \\ -0.45 \\ \hline 0.55 \end{array}$$

0.55 gallons of lemonade concentrate are left in the jug.

SUMMARY (What I learned today)
