

Lesson 6: Rational Numbers on the Number Line

Classwork

Opening Exercises

1. Write the decimal equivalent of each fraction.

a. $\frac{1}{2}$

b. $\frac{4}{5}$

c. $6\frac{7}{10}$

2. Write the fraction equivalent of each decimal.

a. 0.42

b. 3.75

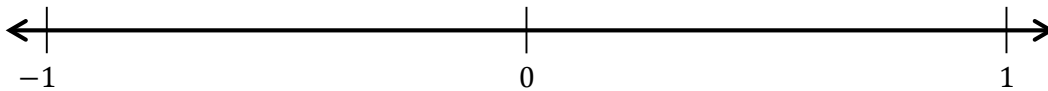
c. 36.90

Example 1: Graphing Rational Numbers

If b is a nonzero whole number, then the unit fraction $\frac{1}{b}$ is located on the number line by dividing the segment between 0 and 1 into b segments of equal length. One of the b segments has 0 as its left endpoint; the right endpoint of this segment corresponds to the unit fraction $\frac{1}{b}$.

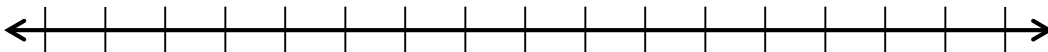
The fraction $\frac{a}{b}$ is located on the number line by joining a segments of length $\frac{1}{b}$, so that (1) the left endpoint of the first segment is 0, and (2) the right endpoint of each segment is the left endpoint of the next segment. The right endpoint of the last segment corresponds to the fraction $\frac{a}{b}$.

Locate and graph the number $\frac{3}{10}$ and its opposite on a number line.



Exercise 1

Use what you know about the points, $-\frac{7}{4}$ and its opposite, to graph both points on the number line below. The fraction $-\frac{7}{4}$ is located between which two consecutive integers? Explain your reasoning.



On the number line, each segment will have an equal length of _____. The fraction is located between _____ and _____.

Explanation:

Example 2: Rational Numbers and the Real World

The water level of a lake rose 1.25 feet after it rained. Answer the questions below using the diagram below.

a. Write a rational number to represent the situation.

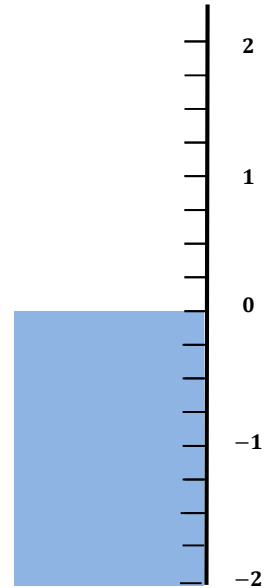
b. What two integers is 1.25 between on a number line?

c. Write the length of each segment on the number line as a decimal and a fraction.

d. What will be the water level after it rained? Graph the point on the number line.

e. After two weeks have passed, the water level of the lake is now the opposite of the water level when it rained. What will be the new water level? Graph the point on the number line. Explain how you determined your answer.

f. State a rational number that is not an integer whose value is less than 1.25, and describe its location between two consecutive integers on the number line.



Exercise 2

Our Story Problem