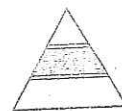


Understand Positive and Negative Numbers

OBJECTIVE Use a number line to understand positive and negative numbers.



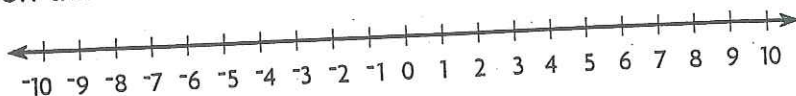
A number line shows positive numbers, negative numbers, and zero. **Positive numbers** are to the right of 0. **Negative numbers** are to the left of 0. **Opposite numbers** are the same distance from 0 on opposite sides of the number line.

What is the opposite of 8?

STEP 1

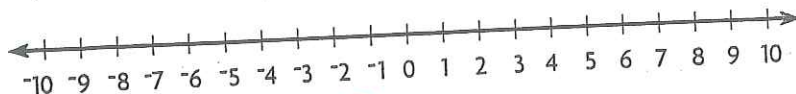
Graph the integer.

Because 8 is positive, graph it to the right of 0 on the number line.



8 is 8 spaces to the right of 0 on the number line.

The opposite number will be 8 spaces to the left of 0 on the number line.

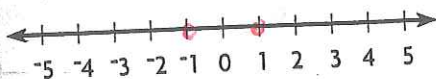


The opposite of 8 is -8.

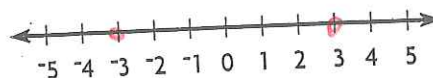
Try This!

Graph the integer and its opposite.

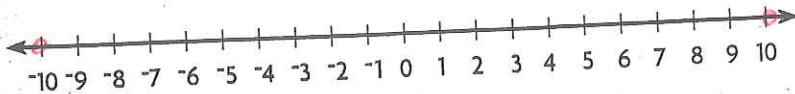
1. 1 opposite: -1



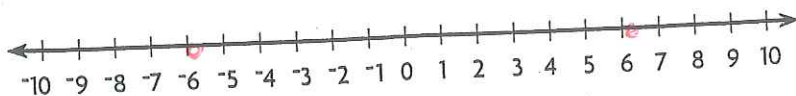
2. -3 opposite: 3

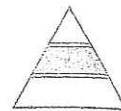


3. -10 opposite: 10



4. 6 opposite: -6





Rational Numbers and the Number Line

OBJECTIVE Graph the location of a rational number on a number line.

A **rational number** is a number that can be written as a fraction $\frac{a}{b}$ where a and b are integers and $b \neq 0$. Fractions, decimals, and integers are all rational numbers. You can use a number line to graph a rational number.

Graph $-\frac{5}{6}$ on a number line.

STEP 1

Find the closest integers to the number.

$-\frac{5}{6}$ is the opposite of $\frac{5}{6}$. That opposite is between the integers 0 and 1.

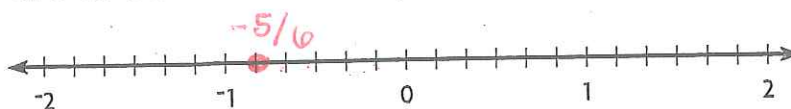
STEP 2

Graph the number.

$-\frac{5}{6}$ is between 0 and -1.

$-\frac{5}{6}$ is closer to -1 than to 0.

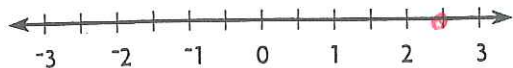
$-\frac{5}{6}$ will be five sixths to the left of 0 on the number line.



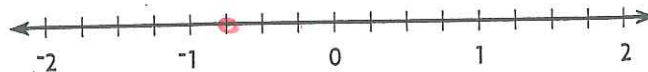
Try This!

Graph the rational number.

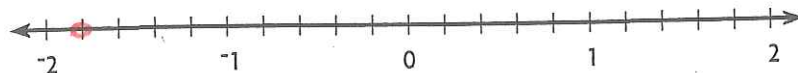
1. 2.5



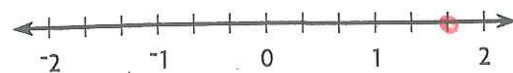
2. $-\frac{3}{4}$

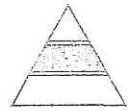


3. -1.8



4. $1\frac{2}{3}$





Compare and Order Rational Numbers

OBJECTIVE Use a number line to compare and order rational numbers.

The numbers on a number line are ordered from least to greatest when read from left to right. Once rational numbers are plotted on a number line, they can be compared or ordered using the symbols $<$ and $>$.

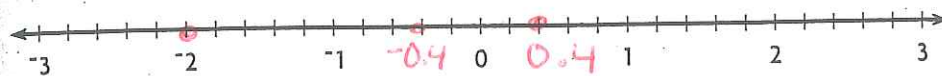
A

Order 0.4, -2, and -0.4 using the number line.

Graph the numbers on the number line.

Write the numbers in order from least to greatest.

Think: As you move right on the number line the numbers become greater.



$$\underline{-2} < \underline{-0.4} < \underline{0.4}$$

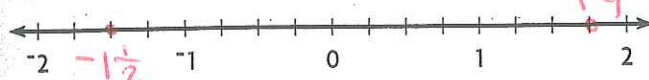
B

Compare $-1\frac{1}{2}$ and $1\frac{3}{4}$ using the number line.

Graph the numbers.

$-1\frac{1}{2}$ is between -1 and -2.

$1\frac{3}{4}$ is between 1 and 2.



$$-1\frac{1}{2} < 1\frac{3}{4}$$

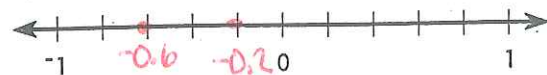
Try This!

Compare the numbers.

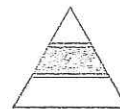
1. $1.2 > -3.5$

Order the numbers from least to greatest.

2. -0.2, -0.6, 2



$$\underline{-0.6} < \underline{-0.2} < \underline{2}$$


SKILL
S66

Absolute Value

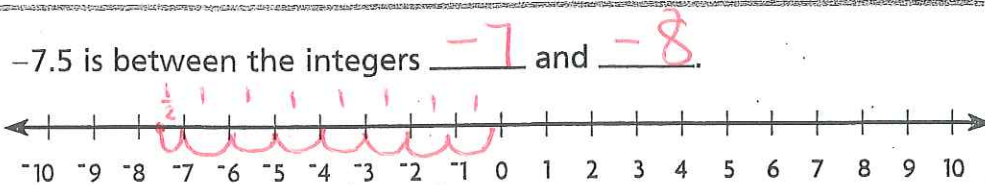
OBJECTIVE Use a number line to find the absolute value of a number.

The **absolute value** of a number is its distance from 0 on a number line. The absolute value of a number n is written as $|n|$. Because distance can never be negative, absolute value can never be negative.

Find the value of $|-7.5|$.

STEP 1

Graph the point on a number line.


STEP 2

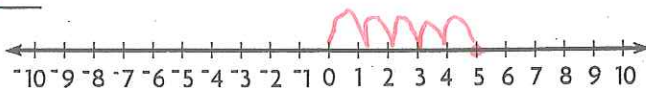
Count the distance from the point to 0.

The distance from -7.5 to 0 is 7.5 .
 So, $|-7.5| = \underline{7.5}$.

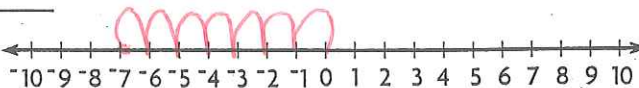
Try This!

Find each absolute value. Graph the point on the number line.

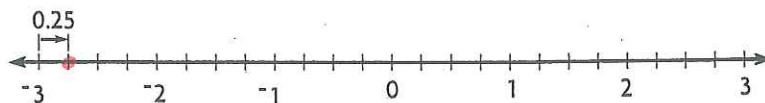
1. $|5| = \underline{5}$



2. $|-7| = \underline{7}$



3. $|-2.75| = \underline{2.75}$



4. $|\frac{-1}{8}| = \underline{\frac{1}{8}}$

