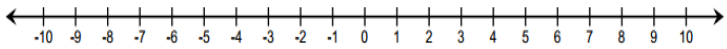
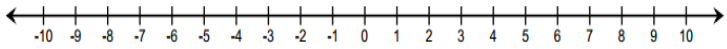
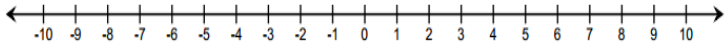
Lesson 11: Absolute Value—Magnitude and Distance

Classwork

The absolute value of a number is the distance between the number and zero on the number line.

Exercises 1–3

Complete the following chart.

	Number	Absolute Value	Number Line Diagram	Different Number with the Same Absolute Value
1.	-6			
2.	8			
3.	-1			

The magnitude of a measurement is the absolute value of its measure.

Exercises 4–7

For each scenario below, use absolute value to determine the magnitude of each quantity.

4. Maria was sick with the flu, and her weight change as a result of it is represented by -4 pounds. How much weight did Maria lose?

5. Jeffrey owes his friend $\$5$. How much is Jeffrey's debt?

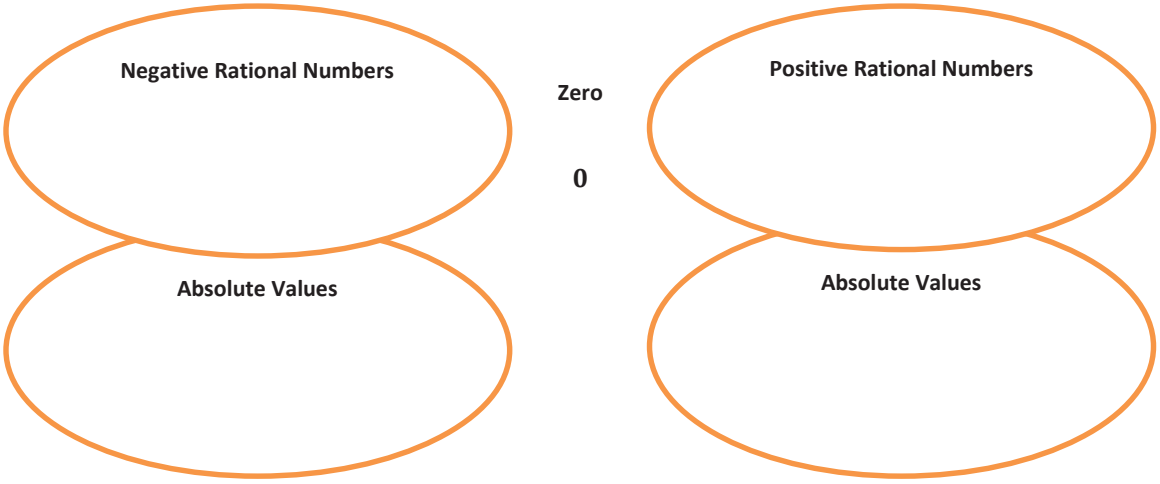
6. The elevation of Niagara Falls, which is located between Lake Erie and Lake Ontario, is 326 feet. How far is this above sea level?

7. Complete the steps below to order these numbers:

$$\left\{2.1, -4\frac{1}{2}, -6, 0.25, -1.5, 0, 3.9, -6.3, -4, 2\frac{3}{4}, 3.99, -9\frac{1}{4}\right\}$$

a. Separate the set of numbers into positive rational numbers, negative rational numbers, and zero in the top cells below (order does not matter).

b. Write the absolute values of the rational numbers (order does not matter) in the bottom cells below.



c. Order each subset of absolute values from least to greatest.

d. Order each subset of rational numbers from least to greatest.

e. Order the whole given set of rational numbers from least to greatest.

Problem Set

For each of the following two quantities in Problems 1–4, which has the greater magnitude? (Use absolute value to defend your answers.)

1. 33 dollars and -52 dollars

2. -14 feet and 23 feet

3. -24.6 pounds and -24.58 pounds

4. $-11\frac{1}{4}$ degrees and 11 degrees

For Problems 5–7, answer true or false. If false, explain why.

5. The absolute value of a negative number will always be a positive number.

6. The absolute value of any number will always be a positive number.

7. Positive numbers will always have a higher absolute value than negative numbers.

8. Write a word problem whose solution is $|20| = 20$.

9. Write a word problem whose solution is $|-70| = 70$.

10. Look at the bank account transactions listed below, and determine which has the greatest impact on the account balance. Explain.
    a. A withdrawal of $\$60$
    b. A deposit of $\$55$
    c. A withdrawal of $\$58.50$