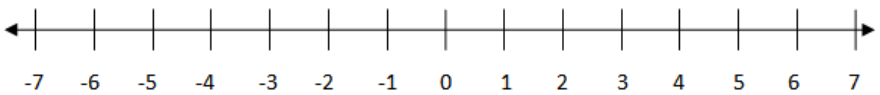
Lesson 2: Integers

Integers, Opposites, and Absolute Value

Vocabulary

Integers	Natural Numbers, their negatives, and zero: … -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, …
Number Line	 Integers are used to name the points shown on a number line.
Negative Integers	Numbers used to name points to the left of 0 on a number line.
Negative sign "-"	The sign used in front of a number to indicate it is a negative number.
Positive Integers	Numbers used to name points to the right of 0 on a number line.
Positive sign "+"	The sign used in front of a number to indicate it is a positive number. If no sign is present, the default value is positive.
Real Numbers	All the points along the number line, including the points between the integers.
Ascending Order	Writing a group of numbers from smallest to largest
Minimum	The least number in a group of numbers
Maximum	The greatest number in a group of numbers
Extreme Values	The least and greatest numbers in a group of numbers

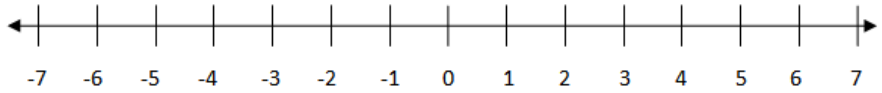
TRY: Given the definitions above, complete the following.

Identify the minimum and maximum values in: -15, 26, -32, -19, 35, 47, -31

Identify which of the following are integers: -19 3,405 -.3 0 ½ -4.8

Vocabulary

Opposite	Two numbers whose points they name are the same distance from 0, but in different directions.



The distance from -4 to 0 along the number line is 4 units. The distance from 4 to 0 along the number line is 4 units. These two distances are the same therefore -4 and 4 are opposites.

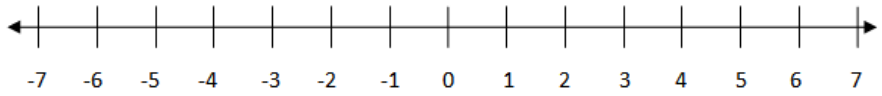
Examples: The opposite of 8 is -8. The opposite of -7 is 7. The opposite of 0 is 0.

Another way of thinking: In your mind, visualize the number line folded in half at the 0 point. Opposite numbers are now opposite from each other. 1 is directly opposite from -1; -5 is directly opposite from 5, and so on.

TRY: The opposite of -3 is ____. The opposite of 10 is _____.

Vocabulary

Absolute Value	The distance on the number line between the point named by a number and 0



The absolute value does not depend on whether the number is to the left or right of 0. It only depends on its distance from 0. The absolute value of a number a is written $|a|$.

Examples:

| 5 | = 5 |3| = 3 | 0 | = 0 - | -8 | = - 8

| -6 | + | 4 | =
6 + 4 = 10

| -14 | - |- 11 | =
14 - 11 = 3

Another way of thinking: Visualize yourself standing on the number line. If you were standing at 5, it would take you 5 steps to reach 0. The absolute value of 5, or |5|, is 5. If you were at -3, it would take you 3 steps to reach 0. The absolute value of -3, or |-3|, is 3. If you were at 0, it would take 0 steps to reach 0. The absolute value of 0, or |0|, is 0.

TRY:

| -7 | = ____ | 8 | = ____

- | -7 | = ____ | 8 | - | -5 | = ____

| -8 | + | 7 | = ____ | -21 | - |- 16 | = ____

| 0 | = ____ | -15 + 4 | = ____

| 8 | - | -8 | = ____ | -9 | - | -9 | = ____