SOL 6.3 – Integers and Absolute Value

6.3 The student will

a) identify and represent integers;
b) order and compare integers; and
c) identify and describe absolute value of integers.

Understanding the Standard:

- Integers are the set of whole numbers, their opposites, and zero.
- Positive integers are greater than zero.
- Negative integers are less than zero.
- Zero is an integer that is neither positive nor negative.
- A negative integer is always less than a positive integer.
- When comparing two negative integers, the negative integer that is closer to zero is greater.
- An integer and its opposite are the same distance from zero on a number line. For example, the opposite of 3 is -3.
- The absolute value of a number is the distance of a number from zero on the number line regardless of direction. Absolute value is represented as $|-6| = 6$.
- On a conventional number line, a smaller number is always located to the left of a larger number (e.g., –7 lies to the left of –3, thus –7 < –3; 5 lies to the left of 8 thus 5 is less than 8).

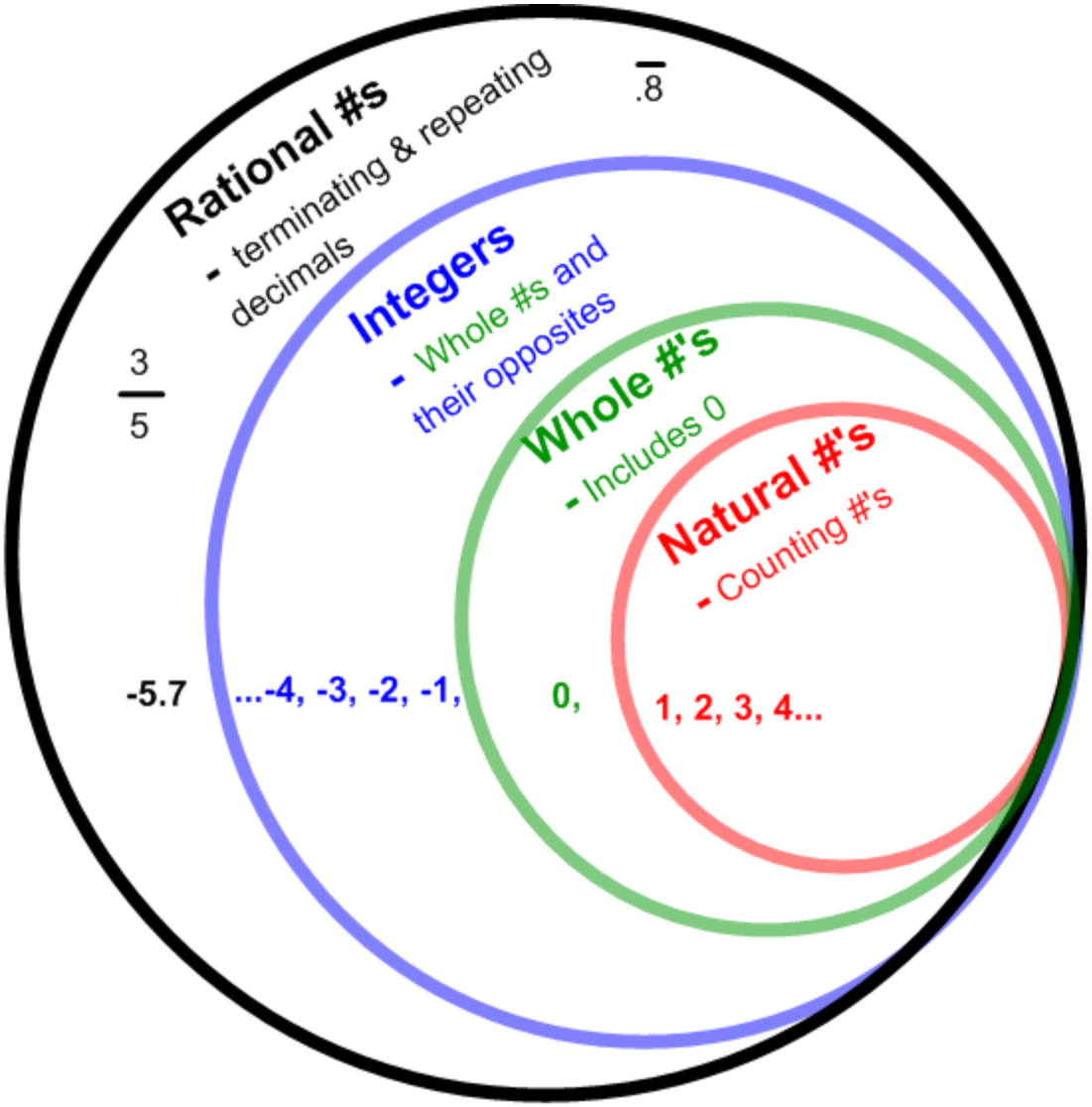
on a # line, the # to the right is greater

absolute value is alwa positive

SOL 6.3 – Integers

The Meaning of Integers:

- **Whole numbers** and their **opposites**.
- Ex. 5, -2, 436, -792
- **Right** is **correct,** so it is **positive**



Integer Vocabulary:

Negatives	Positives
Left – West	Right – East
Down – South	Up – North
Bottom	Top
Lose – loss	Gain
Decrease	Increase
Backwards	Forwards
Withdrawal	Deposit
Below sea level	Above sea level

Inequalities:

- **<** Less than
- **≤** Less than or equal to
- **>** Greater than
- **≥** Greater than or equal to

Comparing and Ordering Integers:

- ascending - goes up or gets bigger
- Descending - goes down or gets smaller

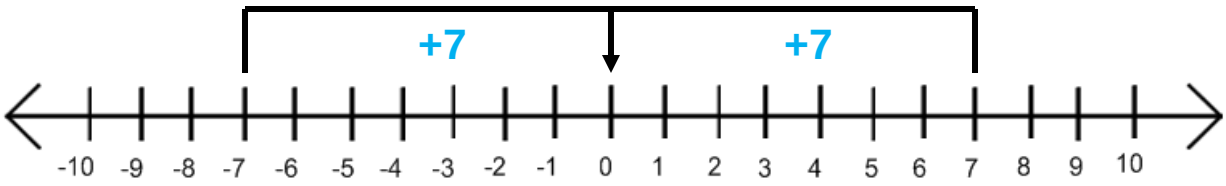
SOL 6.3 – Absolute Value

The Meaning of Absolute Value:

- **The distance from zero**.
- Symbol for absolute value **||**

How to Find Absolute Value:

- When finding the absolute value of an integer, find the distance from zero on a number line.
- Because distances are positive, so is every absolute value.
- Opposite integers will have the same absolute value since they are both the same distance from zero.



Practical Problem involving Absolute Value:

Ryan and Chloe were at Jacob's house. Ryan rode his bike 3 miles west of Jacob's house, and Chloe rode her bike 3 wiles east of Jacob's huse. Who traveled a greater distancefrom Jacob's house?

Ryan and Chloe both traveled the same distance from Jacob's house since each traveled 3 miles in opposite directions.

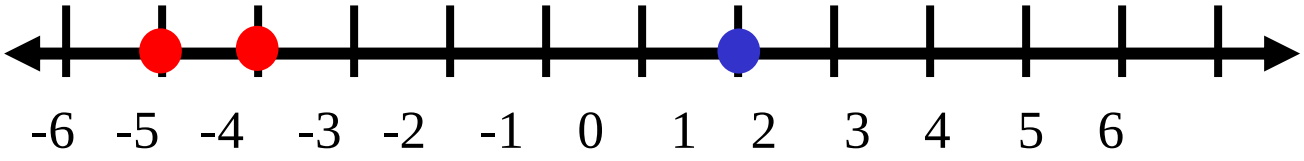
Examples of Absolute Value:

|+7| = +7, |-7| = +7, |-28| = +28, |+12| = +12, |-5| = +5, |-167| = +167

|+7| + 7 = + 14, |-7| + 7 = + 14, |-28| - 16 = +12,

Vocabulary:

Comparing Integers

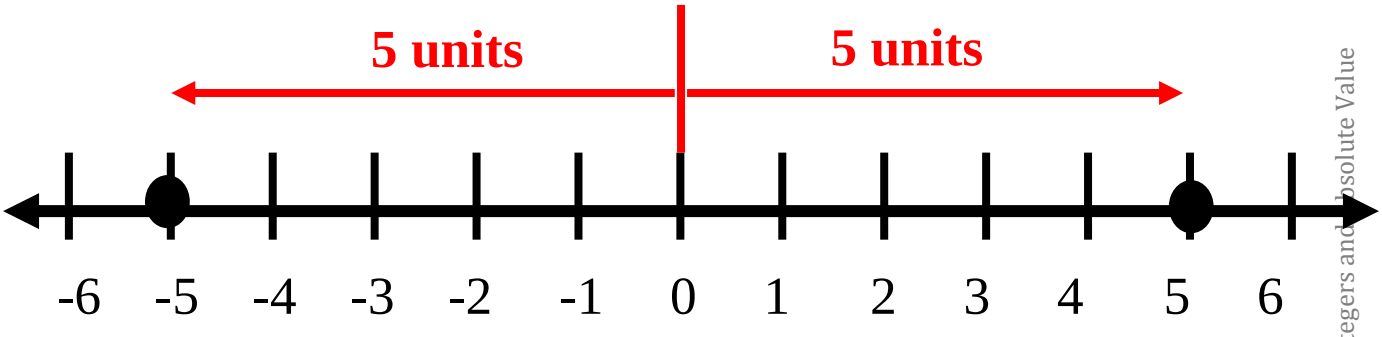


$-5 < 1$ or $1 > -5$

$-4 > -5$ or $-5 < -4$

Absolute Value

$|5| = 5 \quad |-5| = 5$



distance a number is from zero

Essential Understandings:

What role do negative integers play in practical situations?

Negative #s show direction or debt

How does the absolute value of an integer compare to the absolute value of its opposite?

$|7| = 7$ $|-7| = 7$

They are the same because an integer and its opposite are the same distance from 0 on the # line.

Essential Knowledge & Skills:

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Identify an integer represented by a point on a number line.
- Represent integers on a number line.
- Order and compare integers using a number line.
- Compare integers, using mathematical symbols (<, >, =).
- Identify and describe the absolute value of an integer.

19
3|57
3
27

Practice:

Identify each number that is an integer.

25 .5 19 dec. dec.

5^2 $\frac{1}{2}$ -6 $\frac{57}{3}$ 21 $-\frac{8}{24}$ 2.76

Released SOL Questions:

5

Which of these is an integer?

A $\frac{7}{10}$

B 6.5

C $^{-}12$

D $-2\frac{3}{8}$

Which of these lists the numbers in order from least to greatest?

A 3, $^{-}16$, 47

B $^{-}16$, 3, 47

C 3, 47, $^{-}16$

D $^{-}16$, 47, 3

Directions: Click on all the correct answers.

Identify each statement that is true.

$^{-}5 > {}^{-}8$	$^{-}1 \leq {}^{-}6$
$^{-}7 \geq {}^{-}4$	$3 < {}^{-}9$
$^{-}3 > 2$	$10 \geq 8$