

Integers, Opposites, Absolute Value

Objectives:

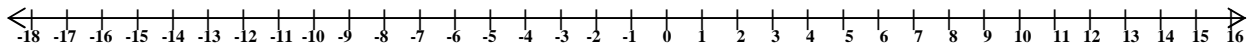
- ...to represent, graph, compare and order integers
- ...to find opposites and absolute values
- ...to evaluate expressions containing absolute value

Assessment Anchor:



7.A.3.2 – Compute accurately with and without use of a calculator

THE NUMBER LINE



NOTES

Definitions:

ABSOLUTE VALUE – the distance a number is from “ZERO” on the number line

1. Symbol is $| |$
2. Absolute value is always a positive value

OPPOSITES – numbers that have the same absolute value

INTEGERS – all whole numbers and their opposites

Places where negative numbers are used:

_____ , _____ , _____ , _____

_____ , _____ , _____ , _____

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Representations using integers:

Situation	Integer	Situation	Integer
the loss of 5 yards	-5	A gain of 45 yards	
19 degrees below zero	-19	12 degrees above zero	
A profit of 400 dollars	400	A loss of 29 dollars	
A debt of 250 dollars	-250	a surplus of 25 computers	
100 feet below sea level	-100	4,000 feet above sea level	
a decrease of 18 degrees		An increase of 10 degrees	
An increase of 20 students		A decrease of 34 students	
A gain of 56 yards		A loss of 11 yards	
8 strokes under par		3 strokes over par	
32 degrees above zero		25 degrees below zero	
A profit of \$10		A debt of \$300	

Comparing integers: (using =, >, <)

$$\begin{array}{cccc}
 -3 \boxed{>} -5 & -2 \boxed{<} 1 & -8 \boxed{<} -6 & -7 \boxed{<} 3 \\
 -9 \boxed{} 7 & -8 \boxed{} -10 & 0 \boxed{} -6 & -3 \boxed{} -14 \\
 -8 \boxed{} -1 & -5 \boxed{} 1 & -6 \boxed{} -20 & 0 \boxed{} -4,000
 \end{array}$$

Ordering integers:

Original list of integers	Ordered least to greatest
-8, -4, -10, -7, 1	-10, -8, -7, -4, 1
11, -4, 0, -3, 9, -9, -1	-9, -4, -3, -1, 0, 9, 11
-13, 11, 7, -4, -2	
3, -4, -9, -1, -2	
22, -31, -10, -4, 18	
-35, -29, 22, -12, 0	

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Opposites and Absolute Values:

The opposite of -7 is 7.

The opposite of 18 is -18.

The opposite of 10 is _____.

The opposite of -3 is _____.

The opposite of -30 is _____.

The opposite of 22 is _____.

$$|-4| = 4$$

$$|18| = 18$$

$$|-15| = 15$$

$$|0| = 0$$

$$|-7| = \underline{\hspace{2cm}}$$

$$|40| = \underline{\hspace{2cm}}$$

$$|-10| = \underline{\hspace{2cm}}$$

$$|-31| = \underline{\hspace{2cm}}$$

$$|6| = \underline{\hspace{2cm}}$$

$$|22| = \underline{\hspace{2cm}}$$

$$|2| = \underline{\hspace{2cm}}$$

$$|-12| = \underline{\hspace{2cm}}$$

The opposite of $|-4|$ is _____.

The opposite of $|5|$ is _____.

The opposite of $-|9|$ is _____.

The opposite of $-|-10|$ is _____.

$$-|-2| = \underline{\hspace{2cm}}$$

$$-|14| = \underline{\hspace{2cm}}$$

$$-|3| = \underline{\hspace{2cm}}$$

$$-|-38| = \underline{\hspace{2cm}}$$

$$|-30| = \underline{\hspace{2cm}}$$

$$-(-|-5|) = \underline{\hspace{2cm}}$$

Evaluating expressions involving absolute values:

Absolute value symbols act like parenthesis!...and should be done _____!

1) Evaluate the following using: $x = -8, y = 12$

A) $19 - |x| \cdot 2$

B) $23 + |-y| \div 4$

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2) Evaluate the following using: $a = -9$, $b = -4$

A) $|-30| - |b|$

B) $30 \times |a| - 40$

3) Evaluate the following using: $m = -6$, $p = 8$

A) $\frac{48}{|p|}$

B) $\frac{p - |m|}{2}$