

# Integers and Absolute Value Guided Notes

## Integers

An **integer** is a positive or negative whole number.

A **positive number** is a number greater than zero.

A **negative number** is a number less than zero.

This number line shows integers.

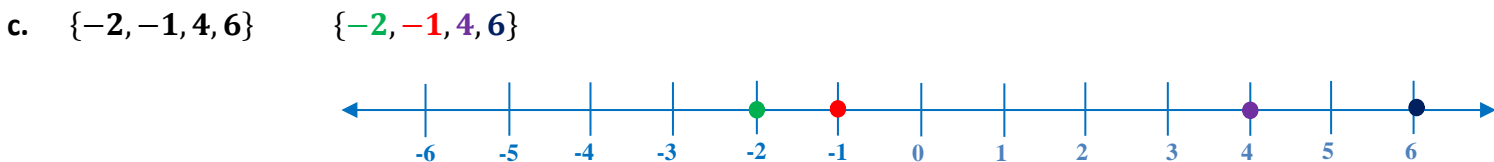
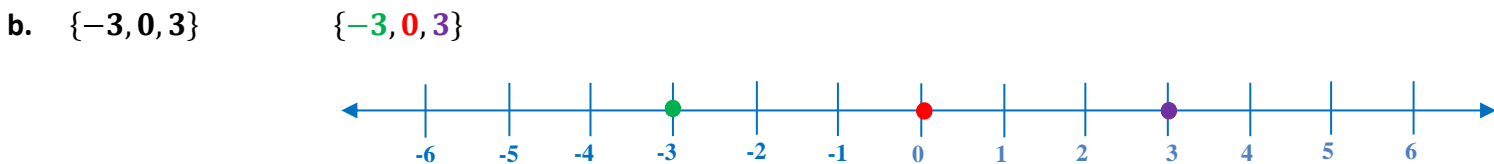
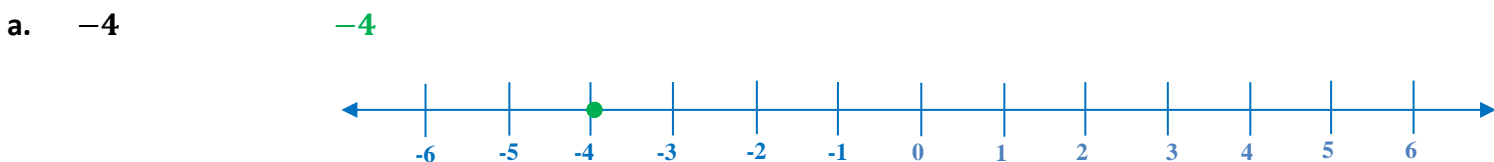


Zero is neither positive nor negative

**Sample Problem 1:** Write an integer to represent each situation.

- a. 22 *ft* below sea level -22
- b. a bonus of \$150 +150
- c. 7 points lost -7

**Sample Problem 2:** Graph each integer or set of integers on a number line.



# Integers and Absolute Value

## Guided Notes

Every integer has an opposite integer. A number and its opposite are the same distance from 0.

**Sample Problem 3:** Find the opposite of each integer.

a.  $-34$

$+34$

b.  $+100$

$-100$

c.  $0$

None opposite

**Sample Problem 4:** Graph each integer and its opposite on a number line.

a.  $-6$

$6$



b.  $5$

$-5$



c.  $-1$

$1$



**Sample Problem 5:** Compare the following integers. Write  $<$ ,  $=$  or  $>$ .

a.  $12$  \_\_\_  $-125$

$12 > -125$

b.  $25$  \_\_\_  $-15$

$25 > -15$

**The absolute value of a number** is the distance between 0 and the number on a number line.

Remember that distance is always a positive quantity (or zero).

Two vertical bars are used to represent absolute value. The symbol for absolute value of 3 is  $|3|$ .

# Integers and Absolute Value

## Guided Notes

**Sample Problem 6:** Find the absolute value of the following numbers.

a.  $|-13| =$   $|-13| = 13$

b.  $|+44| =$   $|+44| = 44$

c.  $|-1,999| =$   $|-1,999| = 1,999$

**Sample Problem 7:** Order the values from least to greatest.

a.  $|-15|, 11, -2, |-4|$   $|-15|, 11, -2, |-4|$

$$|-15| = 15 \quad |-4| = 4$$

$$\begin{array}{cccc} 15, & 11, & -2, & 4 \\ -2, & 4, & 11, & 15 \end{array}$$

$$-2, \quad |-4|, \quad 11, \quad |-15|$$

b.  $4, |+44|, |-8|, -1, |-32|$   $4, |+44|, |-8|, -1, |-32|$

$$|+44| = 44 \quad |-8| = 8 \quad |-32| = 32$$

$$\begin{array}{ccccc} 4, & 44, & 8, & -1, & 32 \\ -1, & 4, & 8, & 32, & 44 \end{array}$$

$$-1, \quad 4, \quad |-8|, \quad |-32|, \quad |+44|$$

**Sample Problem 8:** Evaluate each of the following expressions.

a.  $|-13| + 13 - |4| =$   $|-13| + 13 - |4| =$   
 $= 13 + 13 - 4 =$   
 $= 26 - 4 =$   
 $= 22$

b.  $54 - |+44| - |-8| =$   $54 - |+44| - |-8| =$   
 $= 54 - 44 - 8 =$   
 $= 10 - 8 =$   
 $= 2$

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c.  $128 + |-9| * 10 * |-4| =$

$$\begin{aligned} & 128 + |-9| * 10 * |-4| = \\ & = 128 + 9 * 10 * 4 = \\ & = 128 + 90 * 4 = \\ & = 128 + 360 = \\ & = \mathbf{488} \end{aligned}$$