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Integers and Absolute Value

Unit 1 Lesson 5

Integers and Absolute Value

Students will be able to:

Understand integers and absolute value

Key Vocabulary:

An integer

Positive number

Negative number

Absolute value

Opposite

Integers

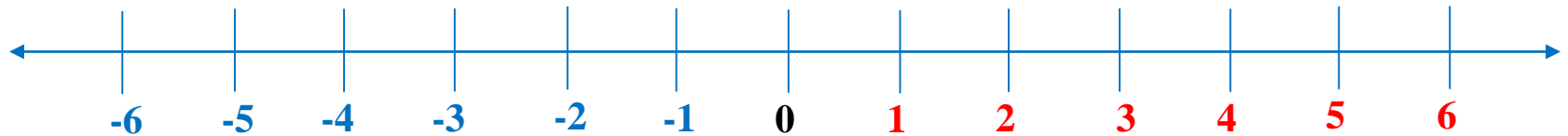
- **An integer** is a positive or negative whole number.
- **A positive number** is a number greater than zero.
- **A negative number** is a number less than zero.

Integers and Absolute Value

This number line shows integers.

Negative integers

Positive integers



Zero is neither positive nor negative

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

- a. **22 *ft*** below sea level

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

a. 22 ft below sea level

-22

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

b. a bonus of **\$150**

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

b. a bonus of \$**150**

+150

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

c. 7 points lost

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

c. 7 points lost

-7

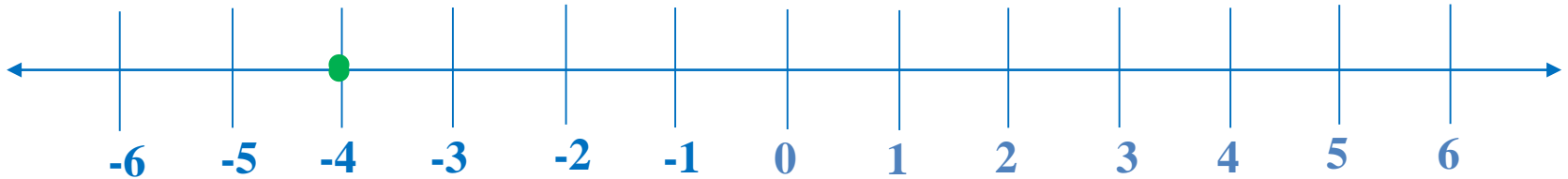
Sample Problem 2: Graph each integer or set of integers on a number line.

a. -4

Integers and Absolute Value

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

a. -4



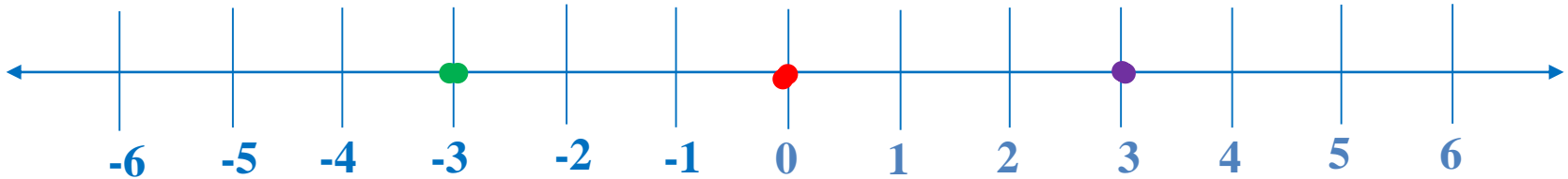
Sample Problem 2: Graph each integer or set of integers on a number line.

b. $\{-3, 0, 3\}$

Integers and Absolute Value

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

b. $\{-3, 0, 3\}$



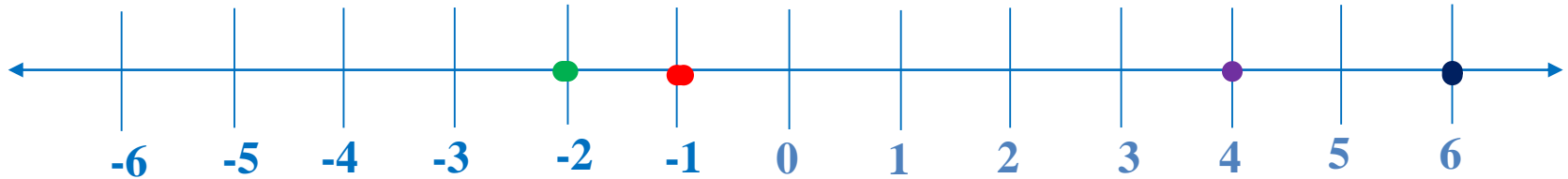
Sample Problem 2: Graph each integer or set of integers on a number line.

c. $\{-2, -1, 4, 6\}$

Integers and Absolute Value

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

c. $\{-2, -1, 4, 6\}$



Integers and Absolute Value

- 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

Sample Problem 3: Find the opposite of each integer.

a. -34

$+34$

Sample Problem 3: Find the opposite of each integer.

b. $+100$

Sample Problem 3: Find the opposite of each integer.

b. $+100$

-100

Sample Problem 3: Find the opposite of each integer.

c. **0**

Sample Problem 3: Find the opposite of each integer.

c. **0**

None opposite

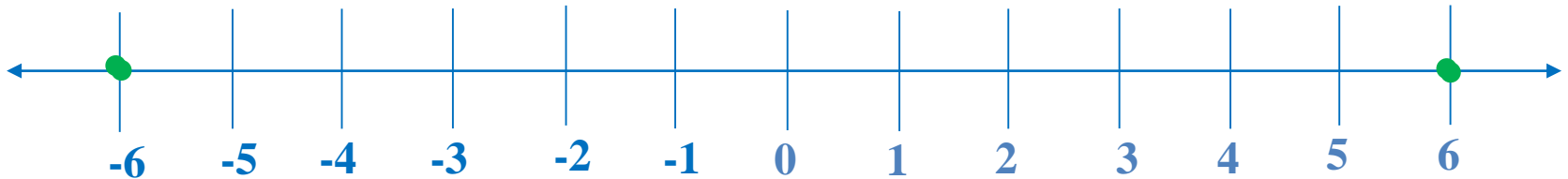
Sample Problem 4: Graph each integer and its opposite on a number line.

a. -6

Integers and Absolute Value

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

a. -6



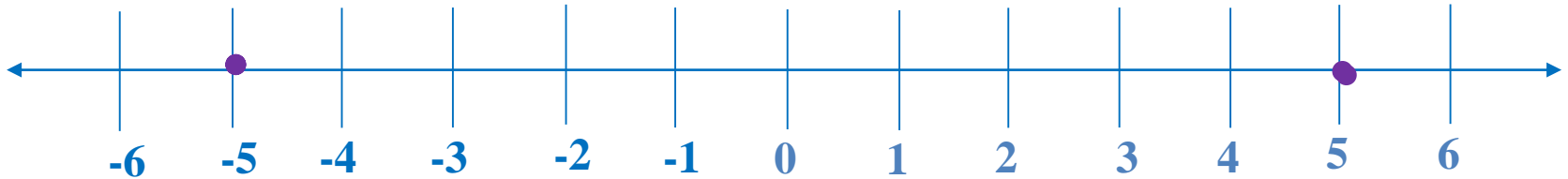
Sample Problem 4: Graph each integer and its opposite on a number line.

b. 5

Integers and Absolute Value

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

b. 5



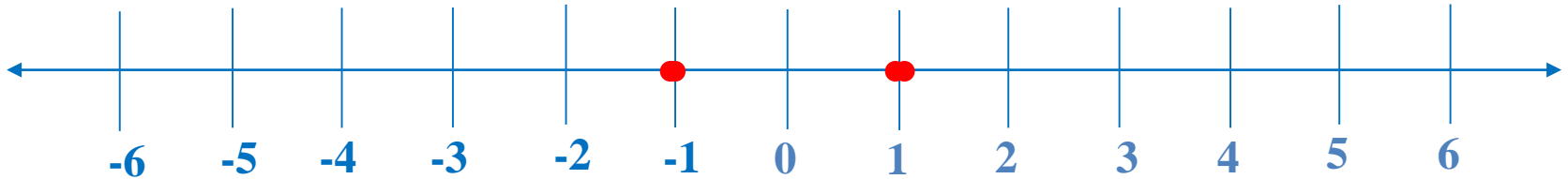
Sample Problem 4: Graph each integer and its opposite on a number line.

c. -1

Integers and Absolute Value

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

c. -1



Integers and Absolute Value

Sample Problem 5: Compare the following integers.

Write $<$, $=$ or $>$.

a. 12 _____ -125

Sample Problem 5: Compare the following integers.

Write $<$, $=$ *or* $>$.

a. $12 > -125$

Integers and Absolute Value

Sample Problem 5: Compare the following integers.

Write $<$, $=$ *or* $>$.

b. 25 _____ -15

Sample Problem 5: Compare the following integers.

Write $<$, $=$ *or* $>$.

b. $25 > -15$

Integers and Absolute Value

- **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 $|3|$.

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

a. $|-13| =$

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

a. $|-13| =$

$$|-13| = 13$$

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

b. $|+44| =$

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

b. $|+44| =$

$$|+44| = 44$$

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

c. $|-1,999| =$

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

c. $|-1,999| =$

$$|-1,999| = 1,999$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Sample Problem 8: Evaluate each of the following expressions.

a. $|-13| + 13 - |14| =$

Sample Problem 8: Evaluate each of the following expressions.

$$\begin{aligned} \text{a. } & | -13 | + 13 - | 14 | = \\ & = 13 + 13 - 14 = \\ & = 26 - 14 = \\ & = 12 \end{aligned}$$

Sample Problem 8: Evaluate each of the following expressions.

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

Sample Problem 8: Evaluate each of the following expressions.

$$\begin{aligned}\text{b. } 54 - |+44| - |-8| &= \\ &= 54 - 44 - 8 = \\ &= 10 - 8 = \\ &= 2\end{aligned}$$

Sample Problem 8: Evaluate each of the following expressions.

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

Sample Problem 8: Evaluate each of the following expressions.

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