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Subtracting Integers

Unit 1 Lesson 7

Subtracting Integers

Students will be able to:

Subtract integers using rules and number line

Key Vocabulary:

An integer

Number line

Opposite

Subtracting Integers

- **Subtraction** of integers can be written as the addition of the opposite number.
- To subtract two integers, rewrite the subtraction expression as the first number plus the opposite of the second number.
- This can be written symbolically as:

$$a - b = a + (-b).$$

Subtracting Integers

When subtraction occurs several times in an expression, rewrite each subtraction as addition of the opposite and then add.

Rule:

The sign of the first number stays the same, change subtraction to addition and change the sign of the second number.

Once you have applied this rule, follow the rules for adding integers.

Subtracting Integers

Same-Change-Change (SCC)

$(+) - (+) = (+) + (-)$ SCC, then subtract, take the sign of the bigger number.

$(-) - (-) = (-) + (+)$ SCC, then subtract, take the sign of the bigger number.

$(+) - (-) = (+) + (+)$ SCC, then add, answer is positive.

$(-) - (+) = (-) + (-)$ SCC, then add, answer is negative

If the signs are the same, add and keep the same sign.

Subtracting Integers

Sample Problem 1: Find the difference.

a. $13 - 16 =$

Subtracting Integers

Sample Problem 1: Find the difference.

a. $13 - 16 =$
 $= 13 + (-16) =$
 $= -3$

Subtracting Integers

Sample Problem 1: Find the difference.

b. $(-44) - (-14) =$

Subtracting Integers

Sample Problem 1: Find the difference.

$$\begin{aligned} \text{b.} \quad & (-44) - (-14) = \\ & = (-44) + 14 = \\ & = -30 \end{aligned}$$

Subtracting Integers

Sample Problem 1: Find the difference.

c. $16 - 89 =$

Subtracting Integers

Sample Problem 1: Find the difference.

$$\begin{aligned} \text{c. } \quad & 16 - 89 = \\ & = 16 + (-89) = \\ & = -73 \end{aligned}$$

Subtracting Integers

Sample Problem 1: Find the difference.

d. $-45 - 83 =$

Subtracting Integers

Sample Problem 1: Find the difference.

$$\begin{aligned} \text{d. } & -45 - 83 = \\ & = -45 + (-83) \\ & = -128 \end{aligned}$$

Subtracting Integers

Using the Number Line to Subtract Integers

You can model the difference between two integers using a number line.

When you subtract a positive number, the difference is less than the original number, so you move to the **left**. To subtract a negative number do the opposite: move to the **right**.

Negative integers



Positive integers



Subtracting Integers

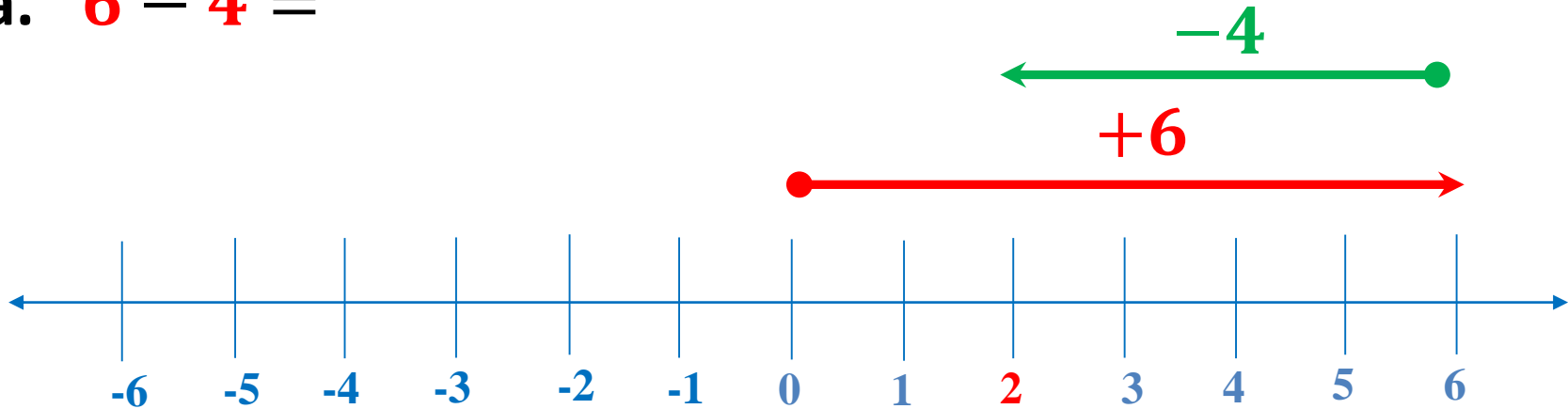
Sample Problem 2: Use a number line to find each difference.

a. $6 - 4 =$

Subtracting Integers

Sample Problem 2: Use a number line to find each difference.

a. $6 - 4 =$



$$= 6 + (-4) = 2$$

Subtracting Integers

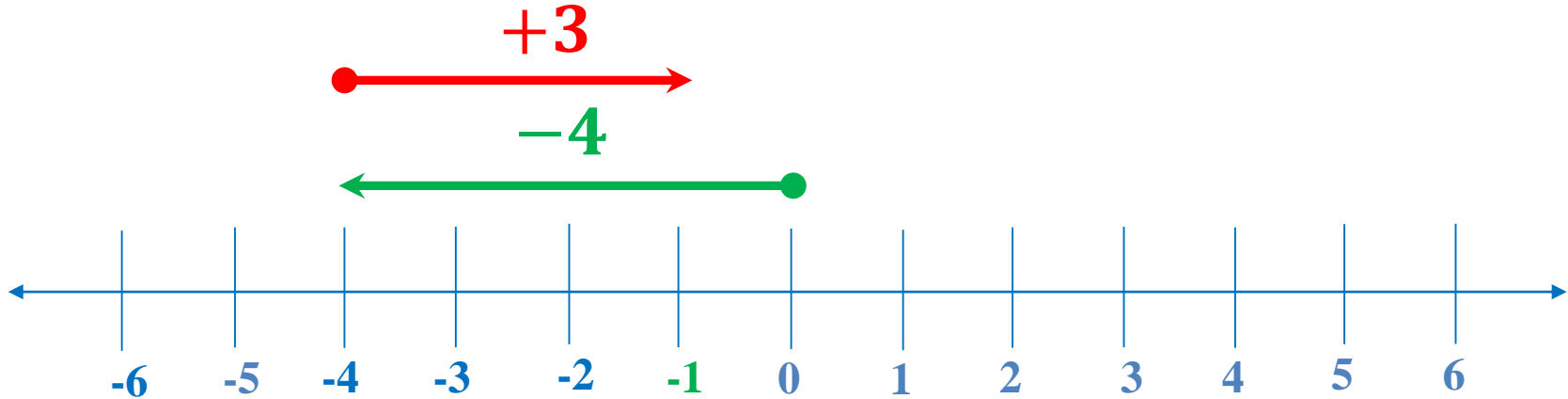
Sample Problem 3: Use a number line to find each difference.

b. $(-4) - (-3) =$

Subtracting Integers

Sample Problem 2: Use a number line to find each difference.

b. $(-4) - (-3) =$



$$(-4) + 3 = -1$$

Subtracting Integers

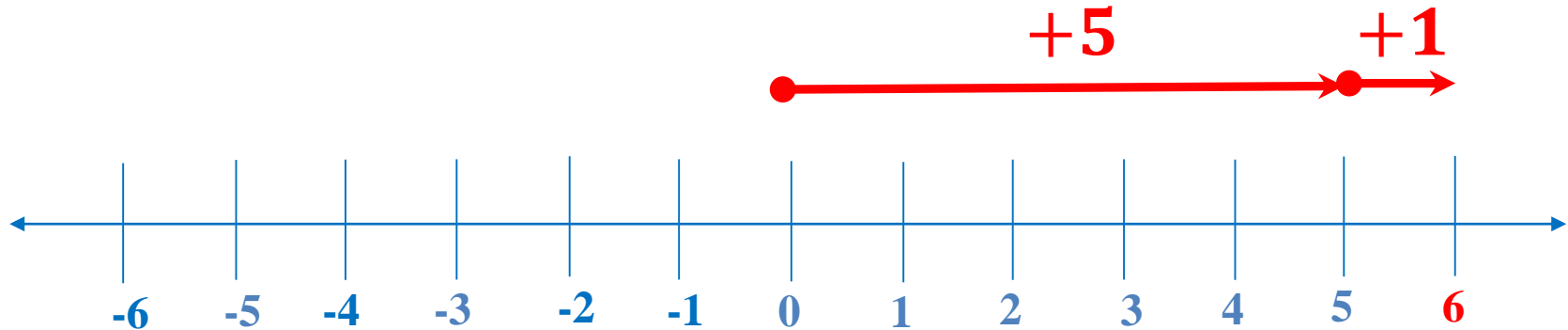
Sample Problem 2: Use a number line to find each difference.

c. $5 - (-1) =$

Subtracting Integers

Sample Problem 2: Use a number line to find each difference.

c. $5 - (-1) =$



$$5 + 1 = 6$$

Subtracting Integers

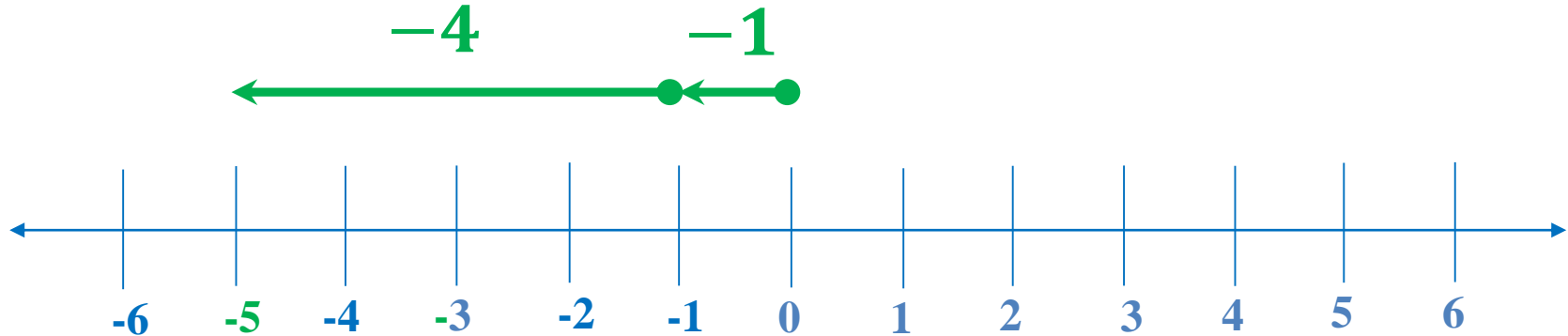
Sample Problem 2: Use a number line to find each difference.

d. $-1 - 4 =$

Subtracting Integers

Sample Problem 2: Use a number line to find each difference.

d. $-1 - 4 =$



$$-1 + (-4) = -5$$

Subtracting Integers

Sample Problem 3: Solve each expression below.

a. $(-15) - (-14) - 12 =$

Subtracting Integers

Sample Problem 3: Solve each expression below.

$$\begin{aligned}\text{a. } & (-15) - (-14) - 12 = \\ & = (-15) + 14 - 12 = \\ & = -1 - 12 = \\ & = -1 + (-12) = \\ & = -13\end{aligned}$$

Subtracting Integers

Sample Problem 3: Solve each expression below.

b. $81 - 25 - (-34) =$

Subtracting Integers

Sample Problem 3: Solve each expression below.

$$\begin{aligned}\text{b. } & 81 - 25 - (-34) = \\ & = 81 + (-25) - (-34) = \\ & = 56 - (-34) = \\ & = 56 + 34 = \\ & = 90\end{aligned}$$

Subtracting Integers

Sample Problem 3: Solve each expression below.

c. $[-2 - 26]^2 - (-50) - 23 =$

Subtracting Integers

Sample Problem 3: Solve each expression below.

$$\begin{aligned} \text{c.} \quad & [-2 - 26]^2 - (-50) - 23 = \\ & = [-2 + (-26)]^2 - (-50) - 23 = \\ & = [-28]^2 - (-50) - 23 = \\ & = 784 - (-50) - 23 = \\ & = 784 + 50 - 23 = \\ & = 834 - 23 = \\ & = 834 + (-23) = 811 \end{aligned}$$

Subtracting Integers

Sample Problem 4: Solve each expression below.

a. $(-132) + (-104) - 100 =$

Subtracting Integers

Sample Problem 4: Solve each expression below.

$$\begin{aligned} \text{a.} \quad & (-132) + (-104) - 100 = \\ & = (-236) - 100 = \\ & = (-236) + (-100) = \\ & = -336 \end{aligned}$$

Subtracting Integers

Sample Problem 4: Solve each expression below.

b. $162 - 122 + (-40) =$

Subtracting Integers

Sample Problem 4: Solve each expression below.

$$\begin{aligned}\text{b. } & 162 - 122 + (-40) = \\ & = 162 + (-122) + (-40) = \\ & = 40 + (-40) = \\ & = 0\end{aligned}$$

Subtracting Integers

Sample Problem 4: Solve each expression below.

c. $[32 - 36]^2 - [-12 + 4]^2 =$

Subtracting Integers

Sample Problem 4: Solve each expression below.

$$\begin{aligned} \text{c.} \quad & [32 - 36]^2 - [-12 + 4]^2 = \\ & = [32 + (-36)]^2 - [-12 + 4]^2 = \\ & = [-4]^2 - [-8]^2 = \\ & = 16 - 64 = \\ & = 16 + (-64) = \\ & = -48 \end{aligned}$$