LESSON 1.2

Integers and the Number Line

CA Standards
NS 1.1
NS 2.5

Goal: Study integers.

Vocabulary

Integers: Numbers consisting of the negative integers, zero, and the positive integers

Negative integer: An integer less than 0

Positive integer: An integer greater than 0

Absolute value: The distance between a number and zero on a number line

Opposites: Two numbers that are the same distance from 0 on a number line but are on opposite sides of 0

EXAMPLE 1 Ordering Integers Using a Number Line

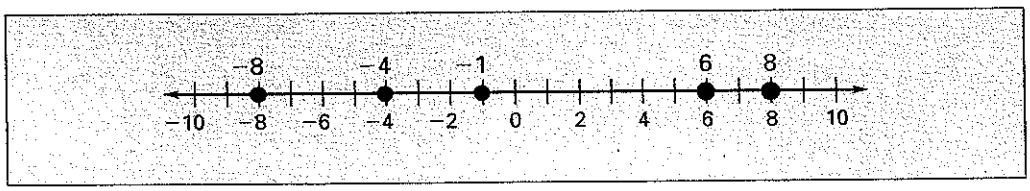
Temperature The table shows the low temperatures for five days. Which day had the lowest temperature?

Daily Low Temperatures	
Day	Temperature (°C)
Monday	8
Tuesday	−4
Wednesday	−1
Thursday	−8
Friday	6

Remember that negative integers lie *to the left* of 0 and positive integers lie *to the right* of 0.

Solution

To find which day had the lowest temperature, graph each integer on a number line.

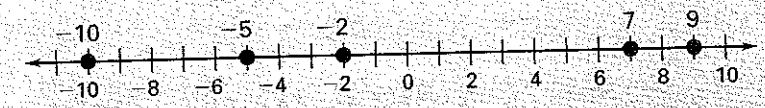


Think: If numbers on a number line increase as you move to the right, which number is the smallest?

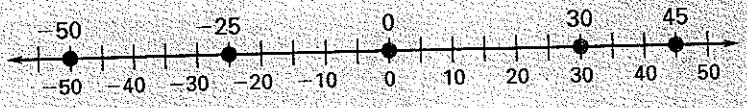
Answer: Thursday had the lowest temperature, −8 °C.

Guided Practice **Order the integers from least to greatest.**

1. 7, −5, 9, −10, −2



2. 0, −25, 45, −50, 30

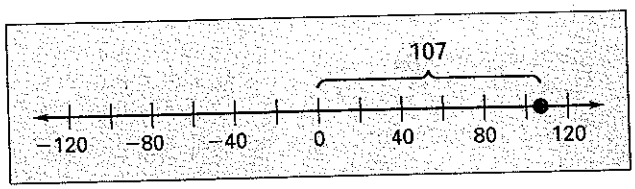


EXAMPLE 2 Finding Absolute Value

Animals A seagull is flying at an altitude of 107 feet and a shark is swimming at a depth of −112 feet relative to sea level. Which animal is farther from sea level?

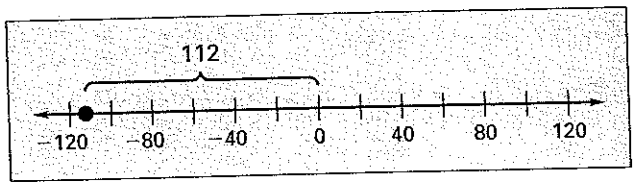
Solution

STEP 1 **Find** the absolute value of 107 using a number line.



The distance between 107 and 0 is [107]. So, |107| = [107].

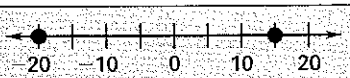
STEP 2 **Find** the absolute value of −112 using a number line.

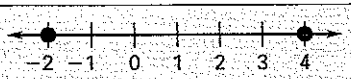


The distance between −112 and 0 is [112]. So, |−112| = [112].

Answer: The [shark] is farther from sea level because [112] > [107].

Guided Practice **Identify the graphed number with the greater absolute value.**

3. 

4. 

Find the absolute value of the integer using a number line.

5. −10	**6.** 12
7. 4	**8.** −15

EXAMPLE 3 Finding Opposites

The integer "−14" can be read "negative 14" or "the opposite of 14."

Write the opposite of the integer.

a. 9 The opposite of 9 is [−9].

b. −14 The opposite of −14 is [14].

c. | −8 | Because | −8 | = [8], the opposite of | −8 | is [−8].

Homework

Guided Practice **Write the opposite of the integer.**

9. −1	**10.** 105	**11.** 18	**12.**	−60	