

Example 2: Using Absolute Value to Solve Real-World Problems

The captain of a fishing vessel is standing on the deck at 23 feet above sea level. He holds a rope tied to his fishing net that is below him underwater at a depth of 38 feet.

Draw a diagram using a number line, and then use absolute value to compare the lengths of rope in and out of the water.

Example 3: Making Sense of Absolute Value and Statements of Inequality

A recent television commercial asked viewers, “Do you have over \$10,000 in credit card debt?”

What types of numbers are associated with the word *debt*, and why? Write a number that represents the value from the television commercial.

Give one example of “over \$10,000 in credit card debt.” Then, write a rational number that represents your example.

How do the debts compare, and how do the rational numbers that describe them compare? Explain.

Lesson Summary

When comparing values in real-world situations, descriptive words help you to determine if the number represents a positive or negative number. Making this distinction is critical when solving problems in the real world. Also critical is to understand how an inequality statement about an absolute value compares to an inequality statement about the number itself.

Problem Set

1. Negative air pressure created by an air pump makes a vacuum cleaner able to collect air and dirt into a bag or other container. Below are several readings from a pressure gauge. Write rational numbers to represent each of the readings, and then order the rational numbers from least to greatest.

| Gauge Readings (pounds per square inch) | 25 psi pressure | 13 psi vacuum | 6.3 psi vacuum | 7.8 psi vacuum | 1.9 psi vacuum | 2 psi pressure | 7.8 psi pressure |
|---|-----------------|---------------|----------------|----------------|----------------|----------------|------------------|
| Pressure Readings (pounds per square inch) | | | | | | | |

2. The fuel gauge in Nic's car says that he has 26 miles to go until his tank is empty. He passed a fuel station 19 miles ago, and a sign says there is a town only 8 miles ahead. If he takes a chance and drives ahead to the town and there isn't a fuel station there, does he have enough fuel to go back to the last station? Include a diagram along a number line, and use absolute value to find your answer.