Unit 5, Lesson 14

Absolute Value Meaning

Let's investigate absolute values.

14.1 Worked Example: Absolute Value Expressions

Find the value of the expression $5|3 - 12| + 1$

Step 1: $5|\text{-}9| + 1$

Step 2: $5 \cdot 9 + 1$

Step 3: $45 + 1$

Step 4: The value of the expression is 46.

14.2 What Is Absolute Value?

1. One of the lowest places in Europe is 23 feet below sea level. We can use "-23 feet" to describe its elevation, and "$|\text{-}23|$ feet" to describe its vertical distance from sea level. In the context of elevation, what would each of the following numbers describe?
   a. 37 feet

   b. $|37|$ feet

   c. -6 feet

   d. $|\text{-}6|$ feet

2. Water freezes at 0 degrees Celsius. For each pair of temperatures, which temperature is closest to the freezing point of water? Use absolute value to explain your reasoning.
   a. $14^\circ C$ or $-15^\circ C$
   b. $-5^\circ C$ or $-2^\circ C$
   c. $-12^\circ C$ or $18^\circ C$

14.3 Absolute Value Expressions

Find the value of these expressions.

1. $|10 - 12|$
2. $|-16 + 5|$
3. $3|9 - 4|$
4. $|8 - 10| - 16$
5. $2|-13 - 2| + 18$
6. $9 - |19 + 3|$