

# 3.0

1 CST item

## Students solve equations and inequalities involving absolute values.

### Key Vocabulary

Positive

Negative

Absolute Value

Equation

Inequality

Greater than

Less than

“or equal to”

### Instructional Objectives

- |  |  |
|--|--|
| <p>1 Calculate absolute value as the distance from “0” on a number line.</p>       | <p>1 Simplify: <math> 12 </math></p> <p>2 Simplify: <math> -64 </math></p> <p>3 Simplify: <math> 5 - 20 </math></p> <p>4 Use the definition of Absolute Value to explain why the absolute value of -6 is the same as the absolute value of 6.</p>  |
| <p>2 Understand “greater than” and “less than” symbols and solve inequalities.</p> | <p>1 If <math>x &lt; 2</math>, find three possible values of <math>x</math>.</p> <p>2 If <math>x \geq 2</math>, find three possible values of <math>x</math>.</p> <p>3 If <math>3x + 5 \leq 23</math>, find three possible values of <math>x</math>.</p> <p>4 Solve for <math>x</math>: <math>4x - 7 &gt; 3</math></p>   |
| <p>3 Solve equations involving absolute value.</p>                                 | <p>1 If <math> 1 + x  = 5</math>, find two possible values of <math>x</math>.</p> <p>2 Solve for <math>x</math>: <math> -7x  = 42</math></p> <p>3 Solve for <math>x</math>: <math> 5x  + 3 = 43</math></p> <p>4 Solve for <math>x</math>: <math> 2x - 4  = 16</math></p>   |
| <p>4 Solve word problems that could be modeled using absolute value.</p>           | <p>1 John and Sarah both started at the same spot. John walked directly forward 12 meters. Sarah walked directly backwards 5 meters. How many meters are between John and Sarah now?</p> <p>2 The temperature at noon was <math>34^{\circ}</math>. At 8:00 pm the temperature was <math>-16^{\circ}</math>. How many degrees did the temperature drop from noon to 8:00 pm?</p> <p>3 <b>City A</b> has an altitude of 560 feet. <b>City B</b> has an altitude of -200 feet. What is the difference in altitude between <b>City A</b> and <b>City B</b>?</p> <p>4 Durrell is trying to fill an empty glass with exactly 8 ounces of water. He adds some amount of water to the empty glass, and then weighs the glass, only to discover that he is 2 ounces off from his target. Determine two possible amounts of water Durrell might have added to the empty glass. <b>Write an absolute value equation to model this scenario.</b></p> |
| <p>5 Solve inequalities involving absolute value.</p>                              | <p>1 Find 5 possible values of <math>x</math> that make the following inequality true: <math> x - 1  \leq 3</math></p> <p>2 Describe all possible values of <math>x</math>: <math> 3x  \geq 21</math></p> <p>3 Solve for <math>x</math>: <math> x + 4  &gt; 10</math></p> <p>4 If <math>x</math> is an integer, what are all the possible values of <math>x</math> that make the following inequality true? <math> x + 2  &lt; 5</math></p>  |