Absolute Value Worksheets Questions and Answers PDF

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Part 1: Building a Foundation

What is the absolute value of -7?

Hint: Remember that absolute value measures distance from zero.

- ◯ -7
- ◯ 0
- ◯ **7 ✓**
- ◯ -14

> The absolute value of -7 is 7.

Which of the following statements about absolute value are true? (Select all that apply)

Hint: Consider the properties of absolute value.

- ☐ **The absolute value of a number is always positive. ✓**
- ☐ **The absolute value of zero is zero. ✓**
- ☐ **Absolute value measures the distance from zero on a number line. ✓**
- ☐ Absolute value can be negative.

> The true statements are that absolute value is always positive, the absolute value of zero is zero, and it measures distance from zero.

Explain in your own words what the absolute value of a number represents.

Hint: Think about distance and direction on a number line.

The absolute value represents the distance of a number from zero, regardless of direction.

Provide the absolute values for the following numbers:

Hint: Calculate the absolute value for each number listed.

1. a) -15

15

2. b) 8

8

3. c) 0

0

The absolute values are 15, 8, and 0 respectively.

Part 2: comprehension and Application

Which of the following equations correctly represents the absolute value equation |x| = 5?

Hint: Think about the definition of absolute value.

- ◯ **x = 5 or x = -5 ✓**
- ◯ x = 5
- ◯ x = -5
- ◯ x = 0

The correct representation is x = 5 or x = -5.

If |x| < 3, which of the following could be the value of x? (Select all that apply)

Hint: Consider the range of values that satisfy the inequality.

- ☐ -4
- ☐ **2 ✓**
- ☐ **0 ✓**
- ☐ **-2 ✓**

The possible values of x are -2, 0, and 2.

Describe how you would graph the solution to the inequality |x| > 4 on a number line.

Hint: Think about the regions that satisfy the inequality.

You would graph two open circles at -4 and 4, shading the regions to the left of -4 and to the right of 4.

Solve the equation |2x - 3| = 7. What is one possible value of x?

Hint: Consider both cases for the absolute value.

- ◯ **5 ✓**
- ◯ -2
- ◯ 2
- ◯ 3

One possible value of x is 5.

Which of the following represent solutions to the inequality |x + 1| ≤ 4? (Select all that apply)

Hint: Think about the range of values that satisfy the inequality.

- [ ] **3 ✓**
- [ ] **-5 ✓**
- [ ] **0 ✓**
- [ ] **-2 ✓**

The solutions are x = 3, x = -5, x = 0, and x = -2.

Solve the absolute value equation |3x + 2| = 8 and provide both solutions.

Hint: Consider both cases for the absolute value.

The solutions are x = 2 and x = - rac{10}{3}.

Part 3: Analysis, Evaluation, and Creation

Consider the function f(x) = |x - 2|. What is the value of f(x) when x = -1?

Hint: Substitute -1 into the function and calculate.

- ◯ 1
- ◯ **3 ✓**
- ◯ -1
- ◯ 2

The value of f(-1) is 3.

Which of the following inequalities describe the solution set for |x - 4| > 6? (Select all that apply)

Hint: Think about the regions that satisfy the inequality.

- [ ] **x > 10 ✓**
- [ ] **x < -2 ✓**
- [ ] x < 10
- [ ] x > -2

> The inequalities are x > 10 and x < -2.

Analyze the inequality |2x + 5| < 9 and describe the solution set in interval notation.

Hint: Consider the range of values that satisfy the inequality.

> **The solution set in interval notation is (-7, 4).**

If the absolute value equation |x - 3| = |x + 2| is true, what can be concluded about x?

Hint: Think about the implications of the equality of two absolute values.

- ◯ x = 0
- ◯ x = 1
- ◯ **x = -0.5 ✓**
- ◯ x = -2.5

> The conclusion is that x = -0.5.

Which of the following real-world scenarios can be modeled using absolute value? (Select all that apply)

Hint: Consider situations involving distance or deviation.

- [ ] **Calculating the distance between two points on a map. ✓**
- [ ] **Determining the deviation from a target temperature. ✓**

- [ ] Finding the sum of two numbers.
- [ ] Measuring the height of a building.

> The scenarios are calculating distance between two points, and determining deviation from a target temperature.

Create a real-world problem that involves solving an absolute value equation or inequality. Provide a detailed explanation of how to solve it.

Hint: Think about a scenario that requires distance or deviation.

> **The problem could involve a distance from a point, and the solution would involve setting up the absolute value equation.**