

Lesson #4: Section 1.5

By the end of the lesson you will be able to solve ***absolute value equations*** by:

- ~ Using the original non-absolute value equation &
- ~ Using the "evil twin" equation

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What is an Absolute Value?

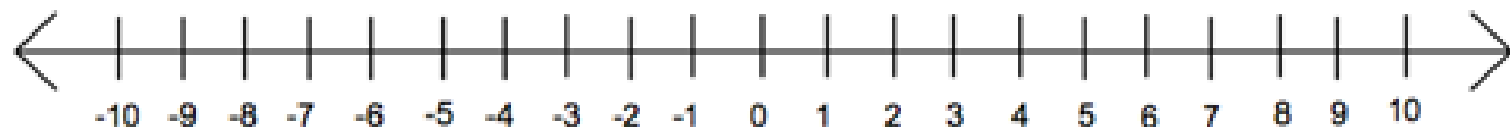
1. $|3| =$

2. $|-10| =$

3. $|-2| =$

Why do we make them positive?

The **Absolute Value** is the distance from Zero on the number line.



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Example 1:

Evaluate $|3x-6| + 3.2$ if $x = -2$

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Example 2: The Evil Twin -the negative side

Solve $|x-25| = 17$

This means that we could be on the positive side and have

$$(x-25) = 17$$

or we could be on the negative side and have

$$-(x-25) = 17$$

We can take $-(x-25) = 17$ and divide by a negative on both sides. Then we would have

$$(x-25) = -17$$



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"Okay, one time, but just remember who the evil twin in this family really is."

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Example 2: The Evil Twin -the negative side

Solve $|x-25| = 17$

So we have two options our equation could be:

$(x-25) = 17$ or $(x-25) = -17$



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Example 2: The Evil Twin -the negative side

Solve $|x-25| = 17$

So we have two options our equation could be:

$$\begin{array}{l|l} (x-25) = 17 & \text{or} & (x-25) = -17 \\ \hline +25 & +25 & \hline +25 & +25 & \\ \hline x = 42 & & x = 8 \end{array}$$

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Example 3:

Solve $|x+6| = 18$

So we have two options our equation could be:

$$x + 6 = 18 \text{ or } x + 6 = -18$$

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You **MUST** get the absolute value alone first before you do "evil twins"!!!

Example 4:

Solve $3|x + 6| = 36$

So we have two options our equation could be:

$$x + 6 = 12 \text{ or } x + 6 = -12$$

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Example 5:

Solve $|2x + 7| - 5 = 0$

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Example 5.1:

Solve $|2x + 7| + 5 = 0$

What happens if an absolute value is supposedly equals a negative number? Can that happen?

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Example 6:

Solve $-2|2x-7| - 1 = -35$

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Example 7:

Solve $|x - 2| = 2x - 10$

So we have two options our equation could be:

$x - 2 = 2x - 10$ or $x - 2 = -(2x - 10)$

$x - 2 = -2x + 10$

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By the end of the lesson you will be able to solve ***absolute value equations*** by:

- ~ Using the original non-absolute value equation &
- ~ Using the "evil twin" equation

Can you?

Homework:

Assignment #4:

Remember:

You **MUST** get the absolute value alone first before you do "evil twins"!!!

If you don't, you will get the problem wrong.