

HW13: Absolute Value Equations

Date _____ Period _____

Answer the questions. You may need to refer back to Day 13 PowerPoint. You do not need to complete this assignment on a separate sheet of paper.

1) Absolute value tells us the _____ from _____. It cannot be _____ because _____ is always _____.

2) If we are at 4, how far are we from 0?
Therefore, $|4|$ is what?

3) If we are at -78 , how far are we from 0?
Therefore, $|-78|$ is what?

Find the absolute value.

4) $|15|$

5) $|-239|$

6) $\left|-\frac{7}{4}\right|$

7) $|14.6|$

Now let's go the other way.

8) If we are at 15 units away from 0, where are we?

9) If we are at 237 units away from 0, where are we?

10) $|x| = 17$
If x is 17 units away from 0, where is x ?
(Hint: these are the solutions.)

11) $|x| = 0$
If x is 0 units away from 0, where is x ?
(Hint: these are the solutions.)

12) $|x| = 20$
If x is 20 units away from 0, where is x ?
(Hint: these are the solutions.)

13) $|x| = -19$
If x is -19 units away from 0, where is x ?
(Hint: these are the solutions.)

Solve each equation.

14) $|x| = 8.2$

15) $|k| = -5.3$

16) $|n| = 8.5$

17) $|a| = 0.4$

Let's kick it up a notch...

18) $|x - 5| = 6$
If $x - 5$ is 6 units away from 0, where is $x - 5$?

19) And then, if $x - 5 = 6$ or $x - 5 = -6$, x is ...
(Hint: solve the two equations.)

20) Therefore, the solution to $|x - 5| = 6$ is ...
(Hint: look at your answer to the previous question.)

Solve each equation. (Hint: separate each absolute value equation into 2 smaller equations without the absolute value. Most, but not all, absolute value equations will have 2 solutions.)

21) $|3n| = 21$

22) $|p + 5| = 0$

23) $|m - 2| = 2$

24) $|r - 5| = -5$

25) $|3x - 8| = 10$

26) $|5 - 7x| = 61$

27) $|k - 3| = 12$

28) $|1 - 2a| = 19$