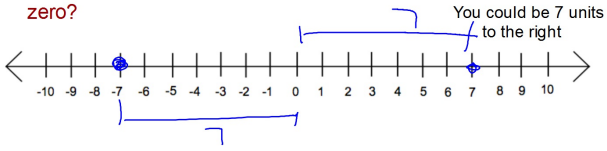
Where could you be located if you are 7 units from zero?



You could also be 7 units to the left.

Section 3-6: Absolute Value Equations

What are possible values for x that make this statement true?

$|x| = 13$

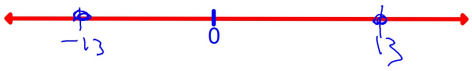
because |-13| and |13| both equal 13:

$x = -13, 13$

Absolute Value: Distance from zero on a number line.

$|x| = 13$

Where are you on a number line if you are exactly 13 units from zero?



You could be 13 units to the left of zero (-13) or 13 units to the right of zero (+13)

Solve. $|x| = 9$

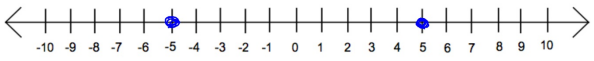
x is exactly 9 units from zero

x = -9 or x = 9

Solve. $|x+2| = 5$

$|5|$ or $|-5|$

x + 2 is exactly 5 units from zero:



$x + 2 = -5$ or $x + 2 = 5$

$-2 \quad -2$ $\quad$ $-2 \quad -2$

$x = -7$ $\quad$ $x = 3$

$x = -7$ or 3

Solve. $|x+2| = 5$

$|5| = 5$ or $|-5| = 5$

$x + 2 = 5$ or $x + 2 = -5$

$-2 \quad -2$ $\quad$ $-2 \quad -2$

$x = 3$ or -7

What are possible values for x that make this statement true?

$|x - 3| = 6$

$|6| = 6$ $\quad$ $|-6| = 6$

$x - 3 = 6$ $\quad$ $x - 3 = -6$

$+3 \quad +3$

$x = 9$ $\quad$ $x = -3$

$x = -3$ or 9

Solve. $|2x + 1| = 13$

$|13| = 13$ $\quad$ $|-13| = 13$

$2x + 1 = 13$ $\quad$ $2x + 1 = -13$

$-1 \quad -1$ $\quad$ $-1 \quad -1$

$2x = 12$ $\quad$ $2x = -14$

$x = 6$ $\quad$ $x = -7$

$x = -7$ or 6

Solve. $|x - 2| + 7 = 15$

$-7 \quad -7$

$|x-2| = 8$

$|-8| = 8$ or $|8| = 8$

$x - 2 = -8$ $\quad +2 \quad +2$

$x = -6$ or $x = 10$

Solve. $|x - 5| + 18 = 8$

$-18 \quad -18$

$|x-5| = -10$

the absolute value can't give -10 as an answer.

NO SOL

Solve. $-3|8x| = -30$

$-3 \quad -3$

$|8x| = 10$

$|-10| = 10$ or $|10| = 10$

$8x = -10$ $\quad 8x = 10$

$x = \frac{-10}{8}, \frac{10}{8} = \pm\frac{5}{4}$

Solve. $4|x + 3| - 9 = 23$

$+9 \quad +9$

$\frac{4|x+3|}{4} = \frac{32}{4}$

$|x+3| = 8$

$x+3 = -8$ or $x+3 = 8$

$x = -11$ or $x = 5$

Solve. $-2|x+1|-10=6$

$+10 \quad +10$

$\frac{-2}{} \quad \frac{}{-2}$

$|x+1| = -8$

NO SOL

Solve. $6|2.5x| = 30$

$\frac{6}{} \quad \frac{}{6}$

$|2.5x| = 5$

$|5| = 5$ or $|-5| = 5$

$2.5x = 5 \qquad 2.5x = 5$

$x = \pm 2$