Absolute Value Equations

$|x|$ Measure Distance

must be positive

$|x-5| \neq$ Negative #

$|2x+3| = -7$ N/S

No Solution

Oct 18-11:40 AM

$|x| = 5$

Two answers

$-5, 5$

$|x| = 0$

one answer

$\emptyset$

Oct 18-11:46 AM

$|x| - 3 = 10$

$+3 \quad +3$

$|x| = 13$

$x = 13 \quad x = -13$

1st Step

Isolate $|x|$

Put By itself

2nd Step

- Remove Bars
- Rewrite equation exactly and Rewrite equation set equal to the negative of number

Oct 18-11:48 AM

$|2x-3| + 4 = 15$

$-4 \quad -4$

$|2x-3| = 11$

$2x-3 = 11$

$+3 \quad +3$

$\frac{2x}{2} = \frac{14}{2}$

$\boxed{x=7}$

$2x-3 = -11$

$+3 \quad +3$

$\frac{2x}{2} = \frac{-8}{2}$

$\boxed{x=-4}$

① Isolate

② Remove Bars

Rewrite exactly and Rewrite set equal to Neg. #

$|2x-3| = 11$

$|2(7)-3| = 11$

$|2(-4)-3| = 11$

$-8-3$

-11

Oct 18-11:53 AM

$|5x+2| - 3 = -3$

$+3 \quad +3$

$|5x+2| = 0$

$5x+2 = 0$

$-2 \quad -2$

$\frac{5x}{5} = \frac{-2}{5}$

$\boxed{x = -2/5}$

$|5x+2| = 0$

$|5(-\frac{2}{5})+2|$

$\frac{5}{1} \cdot \frac{-2}{5} \quad \frac{-10}{5}$

① Isolate $|x|$

Oct 18-12:00 PM

$\frac{\cancel{3}|2x+6|}{\cancel{3}} = \frac{12}{3}$

$|2x+6| = 4$

$2x+6 = 4$

$-6 \quad -6$

$\frac{2x}{2} = \frac{-2}{2}$

$\boxed{x=-1}$

$2x+6 = -4$

$-6 \quad -6$

$\frac{2x}{2} = \frac{-10}{2}$

$\boxed{x=-5}$

Oct 18-12:06 PM

$\frac{3}{4}\left|2x+6\right| = 12\left(\frac{4}{3}\right)$ $\quad \frac{12}{1}\cdot\frac{4}{3}$ $\quad \frac{48}{3}=16$

$\left|2x+6\right|=16$

$2x+6=16$
$-6 \quad -6$
$\frac{2x}{2}=\frac{10}{2}$
$\boxed{x=5}$

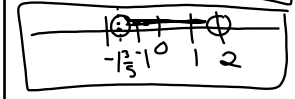
$2x+6=-16$
$-6 \quad -6$
$\frac{2x}{2}=\frac{-22}{2}$
$\boxed{x=-11}$

Oct 18-12:10 PM

$\left|5x-1\right|<9$

① Isolate $|x|$
② $<$ less than And
③ $>$ More OR
④ Remove Bars Rewrite exact and/or rewrite-flip $<>$ /change

$5x-1<9$ & $5x-1>-9$
$+1 \quad +1$ $\qquad +1 \quad +1$
$\frac{5x}{5}<\frac{10}{5}$ $\qquad \frac{5x}{5}>\frac{-8}{5}$
$\boxed{x<2}$ $\qquad \boxed{x>-\frac{8}{5} \text{ or } -\frac{3}{5}}$



Oct 18-12:15 PM

$\left|x\right|<10$ Less Than AND

$\left|x\right|>10$ More Than OR

Oct 18-12:26 PM

5 $\left|-8n\right|<32$

① Isolate
② $<$ And
③ Rewrite Flip/flip

$\frac{-8n}{-8}<\frac{32}{-8}$ AND $\frac{-8n}{-8}>\frac{-32}{-8}$

☆ When Dividing by a Neg. FLIP Sign

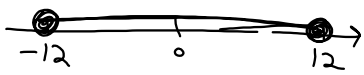
$\boxed{n>-4 \text{ and } n<4}$

Oct 18-12:27 PM

① $\left|\frac{n}{4}\right|\le 3$ And

$(4)\frac{n}{4}\le 3(4)$ And $(4)\frac{n}{4}\ge -3(4)$

$n\le 12$ And $n\ge -12$

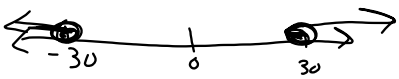


Oct 18-12:31 PM

3) $\left|\frac{x}{6}\right|\ge 5$

$(6)\frac{x}{6}\ge 5(6)$ OR $(6)\frac{x}{6}\le -5(6)$

$x\ge 30$ OR $x\le -30$



Oct 18-12:34 PM

Solving Equations and Inequalities
Rearranging Formulas
Independent Practice

1. Consider the following equation, $bh + hr = 25$.

   Part A: Solve the equation for h.

   Part B: Solve the equation for r.

Oct 18-11:09 AM

2. Consider the following equation $x = \frac{r-h}{y}$.

   Part A: Solve the equation for h.

   Part B: Solve the equation for r.

Oct 18-11:10 AM

Equations and Inequalities
Rearranging Formulas
Mini Assessment

1. The formula for the volume of a cone is

$$V = \frac{1}{3}\pi r^2 h,$$

   where r is the radius of the base and h is the height of the cone.

   Part A: Solve the formula for r.

Oct 18-11:10 AM

Part B: Determine the radius of the cone, if the volume of the cone is $125\ \text{cm}^3$ and the height of the cone is $12\ \text{cm}$. Round your answer to the nearest hundredth.

Oct 18-11:11 AM