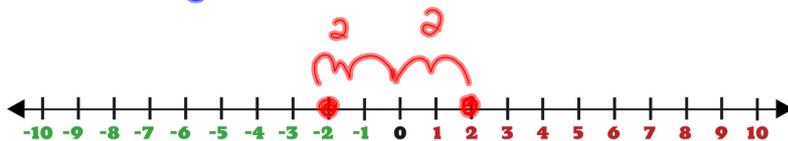


Absolute Value  $\rightarrow$  Distance from zero

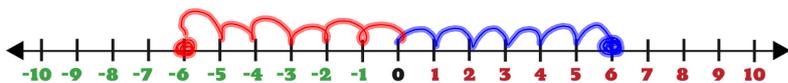
$$|x| = 2 \begin{array}{l} \rightarrow x = 2 \\ \rightarrow x = -2 \end{array}$$

absolute value symbol



Absolute Value

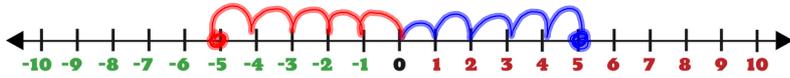
$$|x| = 6 \begin{array}{l} \rightarrow x = 6 \\ \text{or} \\ \rightarrow x = -6 \end{array}$$



$$|x| = -2 \text{ no answer}$$

# Absolute Value

$$|x| = 5$$



$$x = -5 \text{ or } x = 5$$

$$|x| = 3 \quad \begin{array}{l} x = 3 \\ \text{or} \\ x = -3 \end{array}$$

$$|x| = -2 \text{ no answer}$$

$$|x| = 5$$

$$x = 5 \text{ or } x = -5$$

$$|x| = -3 \text{ no answer}$$

$$\overset{-12 \text{ or } 12}{|x|} = 12$$

$$|12| = 12$$

$$12 = 12 \checkmark$$

$$x = 12$$

$$|-12| = 12$$

$$12 = 12$$

$$x = -12$$

$$|11 - 4x| = 7$$

$$|11 - 4(1)| = 7$$

$$|11 - 4| = 7$$

$$|7| = 7$$

$$7 = 7 \checkmark$$

$$x = 1$$

$$x = \frac{9}{2}$$

$$|11 - 4(\frac{9}{2})| = 7$$

$$|11 - 18| = 7$$

$$|-7| = 7$$

$$7 = 7 \checkmark$$

$$|2x - 9| = 11$$

$$x = -1$$

$$|2(-1) - 9| = 11$$

$$|-2 - 9| = 11$$

$$|-11| = 11$$

$$11 = 11 \checkmark$$

$$x = 10$$

$$|2(10) - 9| = 11$$

$$|20 - 9| = 11$$

$$|11| = 11$$

$$11 = 11 \checkmark$$

$$|8 - 2x| = 2$$

$$x = 3$$

or

$$x = 5$$

$$|8 - 2(3)| = 2$$

$$|8 - 6| = 2$$

$$|2| = 2$$

$$2 = 2 \checkmark$$

$$|8 - 2(5)| = 2$$

$$|8 - 10| = 2$$

$$|-2| = 2$$

$$2 = 2 \checkmark$$

$$\left| \frac{1}{2}x + 4 \right| = 6$$

$$\begin{array}{l} \frac{1}{2}x + 4 = 6 \\ \underline{-4 \quad -4} \\ \frac{1}{2}x = 2 \\ \frac{\frac{1}{2}x}{\frac{1}{2}} = \frac{2}{\frac{1}{2}} \\ x = 4 \end{array} \quad \text{or} \quad \begin{array}{l} \frac{1}{2}x + 4 = -6 \\ \underline{-4 \quad -4} \\ \frac{1}{2}x = -10 \\ \frac{\frac{1}{2}x}{\frac{1}{2}} = \frac{-10}{\frac{1}{2}} \\ x = -20 \end{array}$$

$$\left| \frac{2}{3}x + 2 \right| = 10$$

$$\begin{array}{l} \frac{2}{3}x + 2 = 10 \\ \underline{-2 \quad -2} \\ \frac{2}{3}x = 8 \\ \frac{\frac{2}{3}x}{\frac{2}{3}} = \frac{8}{\frac{2}{3}} \\ x = 12 \end{array} \quad \begin{array}{l} \frac{2}{3}x + 2 = -10 \\ \underline{-2 \quad -2} \\ \frac{2}{3}x = -12 \\ \frac{\frac{2}{3}x}{\frac{2}{3}} = \frac{-12}{\frac{2}{3}} \\ x = -18 \end{array}$$

$$|5 - 2x| = 13$$

↑ ↑

$$\begin{array}{r} 5 - 2x = 13 \\ -5 \quad -5 \\ \hline \end{array}$$

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

$$x = -4$$

$$|5 - 2(-4)| = 13$$

$$|5 + 8| = 13$$

$$|13| = 13$$

$$13 = 13 \checkmark$$

$$\text{or } \begin{array}{r} 5 - 2x = -13 \\ -5 \quad -5 \\ \hline \end{array}$$

$$\frac{-2x}{-2} = \frac{-18}{-2}$$

$$x = 9$$

$$|5 - 2(9)| = 13$$

$$|5 - 18| = 13$$

$$|-13| = 13$$

$$13 = 13 \checkmark$$

$$|\frac{2}{3}x - 9| = 18$$

$$\begin{array}{r} \frac{2}{3}x - 9 = -18 \\ +9 \quad +9 \\ \hline \end{array}$$

$$\frac{\frac{2}{3}x}{\frac{2}{3}} = \frac{-9}{\frac{2}{3}}$$

$$x = \frac{-27}{\frac{1}{2}} \\ = -13\frac{1}{2}$$

$$\begin{array}{r} \frac{2}{3}x - 9 = 18 \\ +9 \quad +9 \\ \hline \end{array}$$

$$\frac{\frac{2}{3}x}{\frac{2}{3}} = \frac{27}{\frac{2}{3}}$$

$$x = 40\frac{1}{2}$$

$$|2x - 5| = 9$$

$$\begin{array}{cc} \uparrow & \uparrow \\ |-9| & |9| \\ 9 & 9 \end{array}$$

$$2x - 5 = -9 \quad \text{or} \quad 2x - 5 = 9$$

$$\begin{array}{r} +5 \quad +5 \\ \hline \frac{2x}{2} = \frac{-4}{2} \end{array}$$

$$x = -2 \quad \text{or}$$

$$\begin{array}{r} +5 \quad +5 \\ \hline \frac{2x}{2} = \frac{14}{2} \end{array}$$

$$x = 7$$

$$|x - 8| = 11$$

$$\begin{array}{r} x - 8 = 11 \\ +8 \quad +8 \\ \hline x = 19 \end{array} \quad \text{or} \quad \begin{array}{r} x - 8 = -11 \\ +8 \quad +8 \\ \hline x = -3 \end{array}$$

$$|2x+1| = 5$$

$$\begin{array}{r} 2x+1=5 \\ -1 \quad -1 \\ \hline \frac{2x}{2} = \frac{4}{2} \\ x=2 \end{array} \quad \text{or} \quad \begin{array}{r} 2x+1=-5 \\ -1 \quad -1 \\ \hline \frac{2x}{2} = \frac{-6}{2} \\ x=-3 \end{array}$$

$$\left| \frac{2}{3}x + 2 \right| = 10$$

$$\begin{array}{r} \frac{2}{3}x+2=10 \\ -2 \quad -2 \\ \hline \frac{2}{3}x = \frac{8}{2/3} \\ x=12 \end{array} \quad \text{or} \quad \begin{array}{r} \frac{2}{3}x+2=-10 \\ -2 \quad -2 \\ \hline \frac{2}{3}x = -12 \\ x=-18 \end{array}$$

$$\begin{array}{r} 3\left(\frac{2}{3}x = -12\right) \\ \frac{2x}{2} = \frac{-36}{2} \\ x=-18 \end{array}$$

Homework  
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