

Name: _____

Date: _____

Learning Goal 0.2	Expectations for algebra from previous years.
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Example Solve the one – dimensional inequality.

a. $-12x < 9 - 15x$

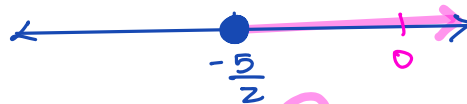
$$\begin{array}{r} +15x \quad +15x \\ -12x < 9 - 15x \\ \hline 3x < 9 \\ \frac{3x}{3} < \frac{9}{3} \\ x < 3 \end{array}$$

$$\begin{array}{r} 0 < 9 - 3x \\ -9 \quad -9 \\ \hline -9 < -3x \\ \frac{-9}{-3} < \frac{-3x}{-3} \\ 3 > x \end{array}$$



b. $3x \frac{7-2x}{3} \leq 4 \times 3$

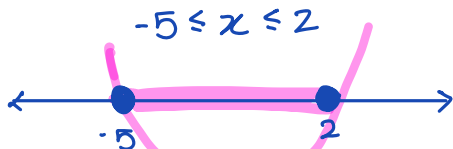
$$\begin{array}{r} 7-2x \leq 12 \\ -7 \quad -7 \\ \hline -2x \leq 5 \\ \frac{-2x}{-2} \leq \frac{5}{-2} \\ x > -\frac{5}{2} \end{array}$$



c. $x^2 + 3x \leq 10 \Rightarrow x^2 + 3x - 10 \leq 0$

BOUNDARY

$$\begin{array}{l} x^2 + 3x - 10 = 0 \\ (x+5)(x-2) = 0 \\ \downarrow \quad \downarrow \\ x = -5 \quad x = 2 \end{array}$$



d. $3x^2 - 5x + 2 > 0$

BOUNDARY

$$\begin{array}{l} 3x^2 - 5x + 2 = 0 \\ 3x^2 - 3x - 2x + 2 = 0 \\ 3x(x-1) - 2(x-1) = 0 \\ (x-1)(3x-2) = 0 \\ \downarrow \quad \downarrow \\ x = 1 \quad x = \frac{2}{3} \end{array}$$

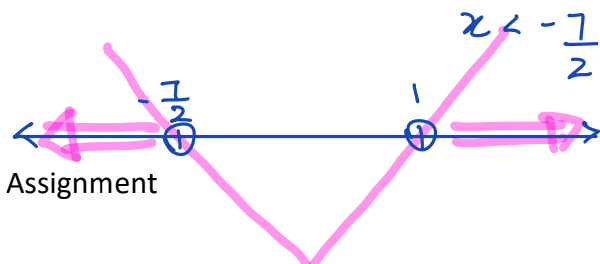
$x < \frac{2}{3}$
 $x > 1$



e. $|4x + 5| > 9$

$$\begin{array}{l} +(4x+5) > 9 \\ -5 \quad -5 \\ \hline 4x > 4 \\ x > 1 \end{array}$$

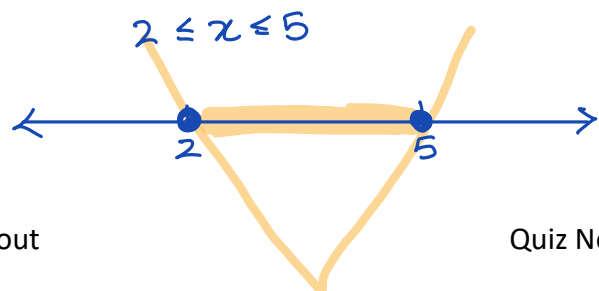
$$\begin{array}{l} -(4x+5) > 9 \\ -4x-5 > 9 \\ -4x > 14 \\ x < -\frac{14}{4} \\ x < -\frac{7}{2} \end{array}$$



Assignment

f. $|7 - 2x| \leq 3$

$$\begin{array}{l} +(7-2x) \leq 3 \\ -2x \leq -4 \\ x \geq 2 \end{array} \quad \text{OR} \quad \begin{array}{l} -(7-2x) \leq 3 \\ -7+2x \leq 3 \\ 2x \leq 10 \\ x \leq 5 \end{array}$$



Handout

Quiz Next Day!

Example Solve the two - dimensional inequality.

a. $y - 5 > -\frac{1}{2}(x + 2)$

slope - point form.

pt: $(-2, 5)$

$m = -\frac{1}{2} = \frac{1}{-2}$

TP: $(0, 0)$

~~$0 - 5 > -\frac{1}{2}(0 + 2)$~~

~~$-5 > -1$~~

b. $y \leq \frac{1}{2}x^2 - 5x + \frac{11}{2}$

$(\frac{-10}{2})^2 = (-5)^2 = 25$

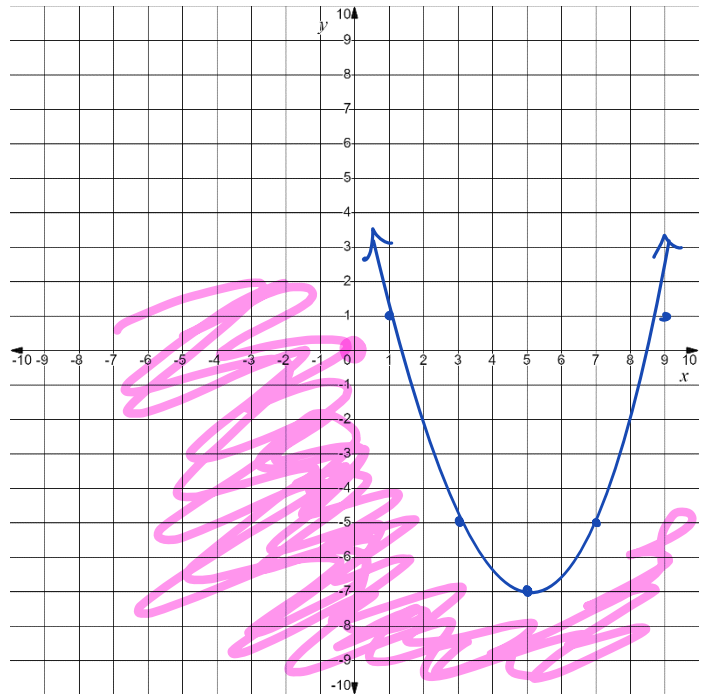
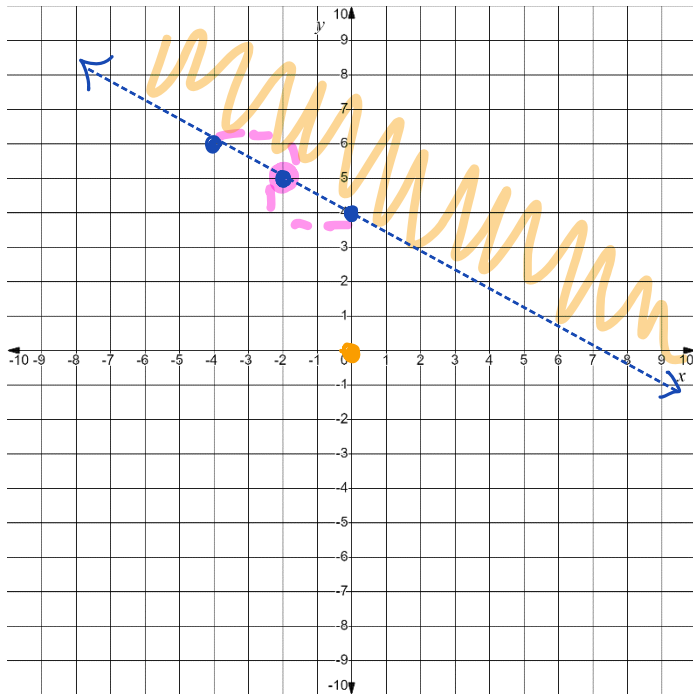
BOUNDARY

$\frac{1}{2}(x^2 - 10x) + \frac{11}{2}$

$= \frac{1}{2}(x^2 - 10x + 25 - 25) + \frac{11}{2}$

$= \frac{1}{2}(x^2 - 10x + 25) - \frac{25}{2} + \frac{11}{2}$

$= \frac{1}{2}(x - 5)^2 - 7$



TP $(0, 0)$

~~$0 \leq \frac{1}{2}(0)^2 - 5(0) + \frac{11}{2}$~~