

Name: _____
 Date: _____
 Class: _____

Algebra
 Unit 2
 HW 2-8

1) Is the following inequality true or false when $x = 2$?

* since only 1 is true the entire statement is false

$\frac{2(x+1)}{3} \leq 6$ ^{Both True} and $-2(3-2x) < 2$

$\frac{2(2+1)}{3} \leq 6 \rightarrow \frac{6}{3} \leq 6$
 $2 \leq 6 \checkmark$
 $\frac{2(3)}{3} \leq 6$

$-2(3-2(2)) < 2$
 $-2(3-4) < 2$
 $-2(-1) < 2$
 $2 < 2$ **NO**

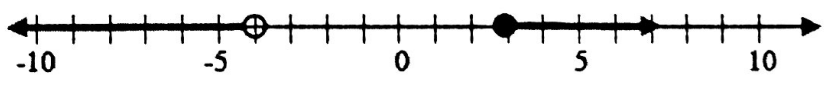
2) Is the following inequality true or false when $x = -1$?

$3x+7 < -11$ or $4-2x \leq 18$ ^{only 1 True}

$3(-1)+7 < -11$ $4-2(-1) \leq 18$
 $-3+7 < -11$ $4+2 \leq 18$
 $4 < -11$ **NO** $6 \leq 18 \checkmark$

since at least 1 is true the entire statement is true.

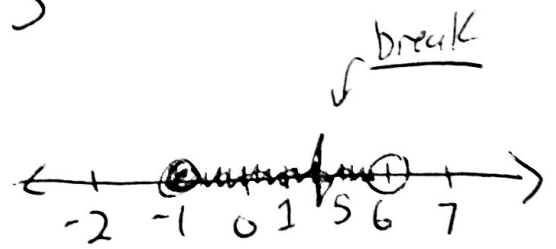
3) Write a compound inequality that would be represented by this graph:



$x < -4$ or $x \geq 3$

4) Solve and graph the following:

$-7 \leq 2x-5 < 7$
 $+5 \quad +5 \quad +5$



$\frac{-2}{2} \leq \frac{2x}{2} < \frac{12}{2}$

TEST
 $-1 \leq 0 < 6 \checkmark$
 shade in middle

closed $-1 \leq x < 6$ **open**

5) Solve and graph the following:

$\frac{1}{2}(x+4) < 5$ or $-2(x-4) \leq 14$

$\frac{1}{2}x + 2 < 5$
 $-2 \quad -2$

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

open
 $x < 6$

$-2x + 8 \leq 14$
 $-8 \quad -8$

$-2x \leq 6$
 $\frac{-2x}{-2} \leq \frac{6}{-2}$

$x \geq 3$ **closed**

$7 < 6 \times$
 $7 \geq 3 \checkmark$
~~Number line graph~~
 $4-3 \quad 0 \quad 6 \quad 7$
 $4 < 6 \checkmark \quad 4 < 6 \checkmark$
 $4 \geq 3 \times \quad 4 \geq 3 \checkmark$

6) Bernard is two less than twice as old as Jerry. Mark is 19 years older than Bernard. When you add all 3 of their ages together you get an answer that is 6 less than 3 times as old as Bernard. How old is Jerry?

$$J \rightarrow x \quad (27)$$

$$B \rightarrow 2x - 2$$

$$M \rightarrow (2x - 2) + 19$$

$$2x - 2 + 19$$

~~$$2x - 2 + 19$$~~

$$\rightarrow 2x + 17$$

$$x + 2x - 2 + 2x + 17 = 3(2x - 2) - 6$$

~~$$5x + 15 = 6x - 6 - 6$$~~

$$5x + 15 = 6x - 6 - 6$$

$$5x + 15 = 6x - 12$$

$$\underline{-5x + 12 \quad -5x + 12}$$

7) Simplify: $x^2(2x - 5) - (6x - 2x^2) + 4x - 9(x^3 + 6x)$ $\underline{27 = x}$

$$\underline{2x^3} - \underline{5x^2} - 6x + \underline{2x^2} + 4x - \underline{9x^3} - \underline{54x}$$

$$\boxed{-7x^3 - 3x^2 - 56x}$$