Review for Test #5 - Inequalities and Absolute Value

Name _____ Class _____

1.) What is the smallest integer value of x that satisfies the inequality $4x + 2 > 2x - 9$?

(A) -11 (B) -7 (C) -5 (D) -1

$2x+2>-9$
$2x>-11$
$x>-5.5$

2.) Which number is *not* a member of the solution set of $-2x \le 13$?

(A) -6.4 (B) -6.5 (C) -6.3 (D) -6.7

$X \ge -6.5$

3.) Which element is in the solution set of the inequality $8 < 3x - 1$?

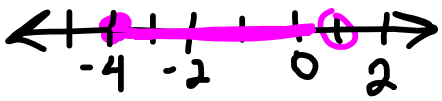
(A) 0 (B) 2 (C) 3 (D) 5

$9 < 3x$ $3 < x$

4.) If a is an integer, what is the solution set of $-4 \le x < 1$?

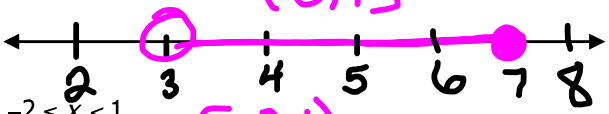
(A) $\{-4,-3,-2,-1,0\}$ (C) $\{-4,-3,-2,-1,0,1\}$

(B) $\{-3,-2,-1,0,1\}$ (D) $\{-3,-2,-1,0\}$

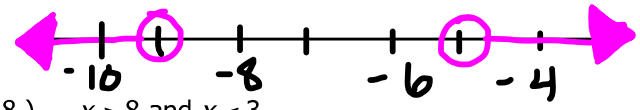


In 5 – 8, graph the double inequalities. Write the answer in interval notation.

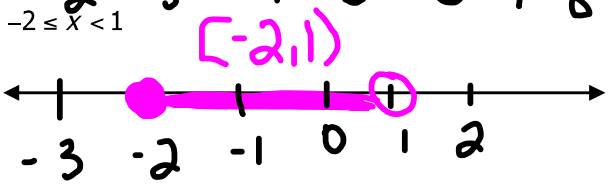
5.) $x > 3$ and $x \le 7$ $(3,7]$



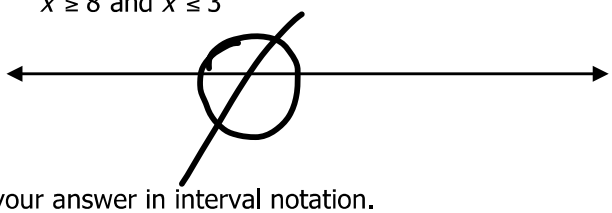
6.) $x < -9$ or $x > -5$ $(-\infty,-9) \cup (-5,\infty)$



7.) $-2 \le x < 1$ $[-2,1)$



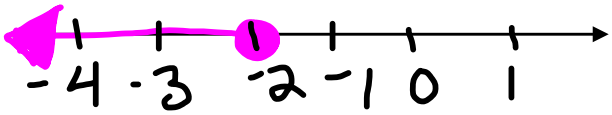
8.) $x \ge 8$ and $x \le 3$



9.) Solve and graph the inequality $4x - 2(x + 1) \ge 3x$. Write your answer in interval notation.

$4x-2x-2 \ge 3x$
$2x-2 \ge 3x$
$-2 \ge x$

$(-\infty,-2]$



10.) Jared went to the store and wanted to spend *at most* $48. He bought a DVD and a poster. The DVD cost eight more than four times the cost of the poster. How much did the DVD cost?

Let cost of poster = x = \$8

Let cost of DVD = $4x+8$ = \$40

$x+4x+8 \le 48$

$5x+8 \le 48$

$5x \le 40$

$x \le 8$

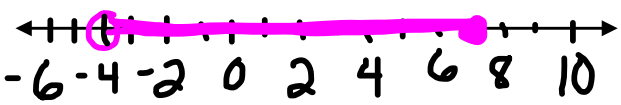
For 11 – 13, solve and graph the compound inequality. Write your answer in interval notation.

11.) $-5 < 3x + 7 \le 28$

$-12 < 3x \le 21$

$-4 < x \le 7$

$(-4, 7]$



12.) $2y > y - 3$ or $3y < y + 6$

$y > -3$ or $2y < 6$

$y > -3$ or $y < 3$

$(-\infty, \infty)$

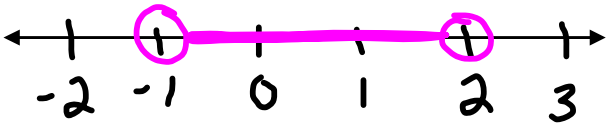
13.) $5 < -2x + 9 < 11$

$-4 < -2x < 2$

$+2 > x > -1$

$-1 < x < 2$

$(-1, 2)$



For 14 – 16, solve the following absolute value equations.

14.) $|2x - 1| + 3 = 6$

$|2x-1| = 3$

$2x - 1 = 3$ or $2x - 1 = -3$

$2x = 4$ $\quad$ $2x = -2$

$x = 2$ or $x = -1$

Both check

$\{-1, 2\}$

15.) $|5x+4|+10=2$

$|5x+4|=-8$

$\emptyset$

16.) $|x-7|=2x-2$

$x-7=2x-2$ or $x-7=-(2x-2)$

$-x-7=-2$ $\quad$ $x-7=-2x+2$

$-x=5$ $\quad$ $3x-7=2$

$x=-5$ $\quad$ $3x=9$

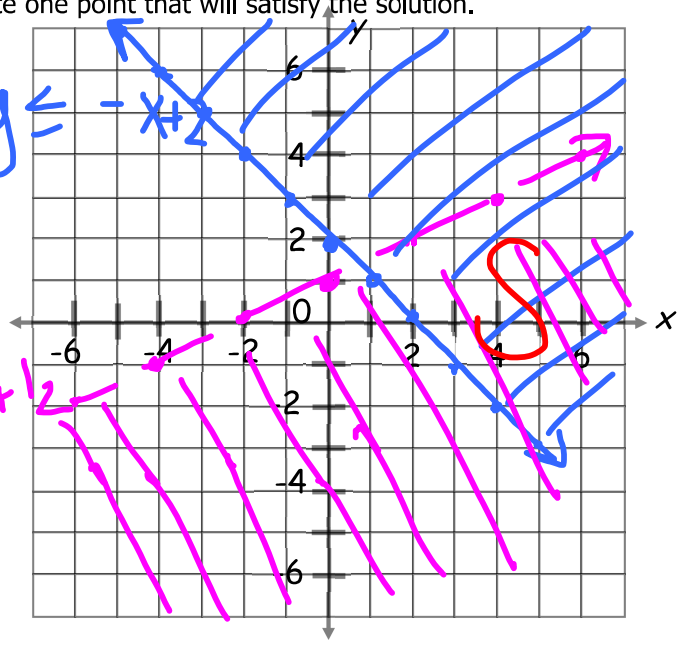
$\{3\}$

doesn't check $\quad$ $x=3$ checks

17.) Solve the following system of inequalities graphically. State one point that will satisfy the solution.

$2y < x+2$ $\rightarrow$ $y < \frac{1}{2}x+1$

$-3y \le 3x-6$ $\rightarrow$ $y \ge -x+2$



possible answer: (5, 1)

18.) Emily babysits for $4 per hour. She also works as a tutor for $7 per hour. She is only allowed to work 13 hours per week. She wants to make at least $65. Write and graph a system of inequalities to represent this situation.

a.) Write and graph a system of inequalities to represent this situation.

Let x = # of hours babysitting

Let y = # of hours tutoring

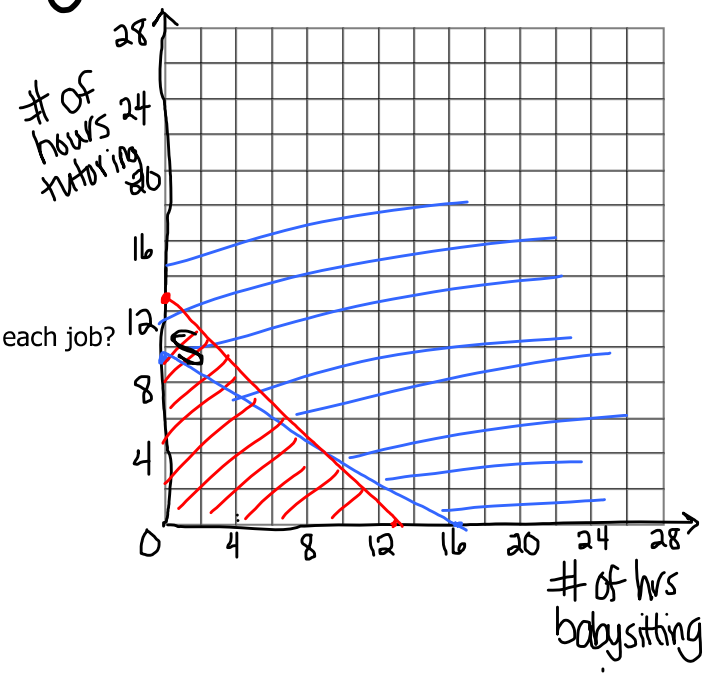
$4x+7y \geq 65$ $\quad$ $x+y \leq 13$

Find x+y intercepts

x: $4x \geq 65$, $x \geq 16.25$ $\quad$ $(16\frac{1}{4}, 0)$

y: $7y \geq 65$, $y \geq 9\frac{2}{7}$ $\quad$ $(0, 9\frac{2}{7})$

x: $(13,0)$ $\quad$ y: $(0,13)$



b.) What is a possible combination of hours you can work at each job? Justify your answer.

answers vary

Ex: 2 hrs. babysitting
10 hrs. tutoring

It's in the shaded area that satisfies both inequalities

Selected Answers (Check my website for a thorough answer key)

1.) D

2.) D

3.) D

4.) A

5.) $(3,7]$

6.) $(-\infty,-9)\cup(-5,\infty)$

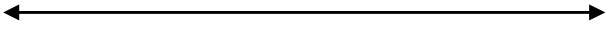
7.) $[-2,1)$

8.) No solution

9.) $x \leq 2$ $\quad$ $[2,\infty)$

10.) $40

11.) $-3 < x \leq 7$ $\quad$ $(-3,7]$



12.) $y > -3$ or $y < 3$ $\quad$ $(-\infty,\infty)$

13.) $-1 < x < 2$ $\quad$ $(-1,2)$

14.) $\{2,-1\}$

15.) no solution

16.) $\{3\}$