

UNIT 7 Solve Linear Inequalities

NAME: _____

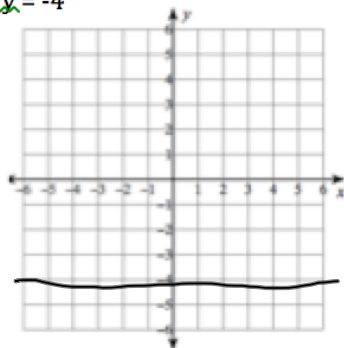
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Skillz Review (1 pt each)

Graph the line.

1) $y = -4$



Evaluate.

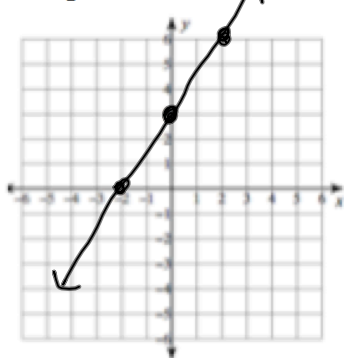
2) $a^2 - b^5$; when $a = -5$ and $b = -1$

$$\begin{aligned} &(-5)^2 - (-1)^5 \\ &25 - (-1) \\ &25 + 1 \\ &\boxed{26} \end{aligned}$$

Solve.

$$\begin{aligned} 3) \quad &5 - 4(1 + 8r) = -127 \\ &5 - 4 - 32r = -127 \\ &1 - 32r = -127 \\ &\quad \quad \quad -1 \\ &\hline &-32r = -128 \\ &\quad \quad \quad \boxed{r = 4} \end{aligned}$$

4) $y = \frac{3}{2}x + 3$



5) $-v^3 - 2v^2$; when $v = 3$

$$\begin{aligned} &- (3)^3 - 2(3)^2 \\ &- (27) - 2(9) \\ &- 27 - 18 \\ &\boxed{-45} \end{aligned}$$

6) $-8k + 1 = 4 - 8k$

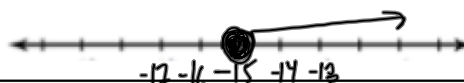
$$\begin{aligned} &\quad \quad \quad +8k \quad \quad +8k \\ &\hline &1 = 4 \\ &\text{No Sol.} \end{aligned}$$

Directions: Solve and graph each inequality. 5 points each.

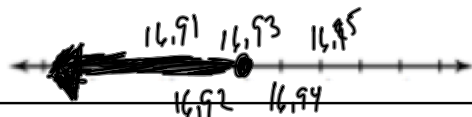
1) $60 < 4x$
 $\frac{60}{4} < \frac{4x}{4}$
 $15 < x$



2) $p - 1 \geq -16$
 $+1 \quad +1$
 $p \geq -15$



3) $9.33 \geq p - 7.6$
 $+7.6 \quad +7.6$
 $\geq p$



4) $1 - 5n - 7n < 1$
 $1 - 12n < 1$
 $-12n < 0$
 $n > 0$



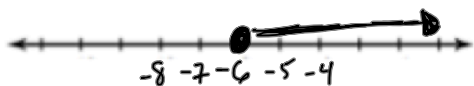
$$5) -3d + 7(-7 - 4d) \leq 137$$

$$-3d + -49 - 28d \leq 137$$

$$-31d - 49 \leq 137$$

$$-31d \leq 186$$

$$d \geq -6$$



Directions: Translate the verbal phrase into an inequality. Then solve the inequality. 5 points.

6) The sum of 5w and 7 is less than the sum of w and 7.

$$5w + 7 < w + 7$$

$$4w < 0$$

$$w < 0$$

Directions: Solve each inequality. 4 points each.

$$7) -101 \geq 4 - 5(6 - 3n)$$

$$-101 \geq 4 - 30 + 15n$$

$$-101 \geq -26 + 15n$$

$$-75 \geq 15n$$

$$\frac{-75}{15} \geq \frac{15n}{15}$$

$$-5 \geq n$$

$$8) n + 2 < -6 + 5n$$

$$2 < -6 + 4n$$

$$+6 \quad +6$$

$$\frac{8}{4} < \frac{4n}{4}$$

$$2 < n$$

Directions: Solve each equation. 4 points each.

$$9) (n - 4) = 11$$

$$n - 4 = 11 \quad \text{or} \quad n - 4 = -11$$

$$+4 \quad +4$$

$$n = 15$$

or

$$n = -7$$

$$10) \left| \frac{x}{9} \right| = 4$$

$$\frac{x}{9} = 4$$

$$x = 36$$

or

$$\frac{x}{9} = -4$$

or

$$x = -36$$

$$11) \frac{|h-6|}{9} = 1 \quad (9)$$

$$|h-6| = 9$$

$$h-6 = 9 \quad \text{or} \quad h-6 = -9$$

$$+6 \quad +6$$

$$+6 \quad +6$$

$$h = 15 \quad \text{or} \quad h = -3$$

$$12) 2 + 6 \left| \frac{b}{10} \right| = 8$$

$$6 \left| \frac{b}{10} \right| = 6$$

$$\left| \frac{b}{10} \right| = 1$$

$$\frac{b}{10} = 1$$

$$b = 10$$

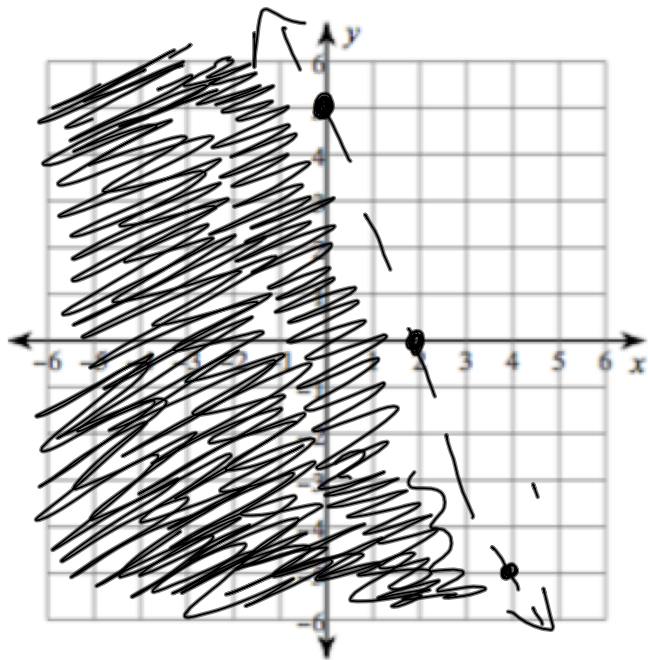
or

$$\frac{b}{10} = -1$$

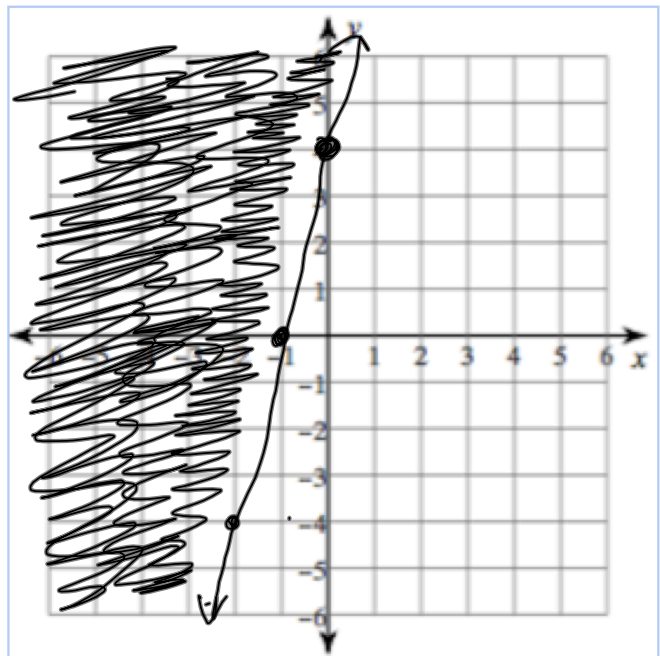
$$b = -10$$

Directions: Sketch the graph of each linear inequality. 5 points each.

13) $y < -\frac{5}{2}x + 5$

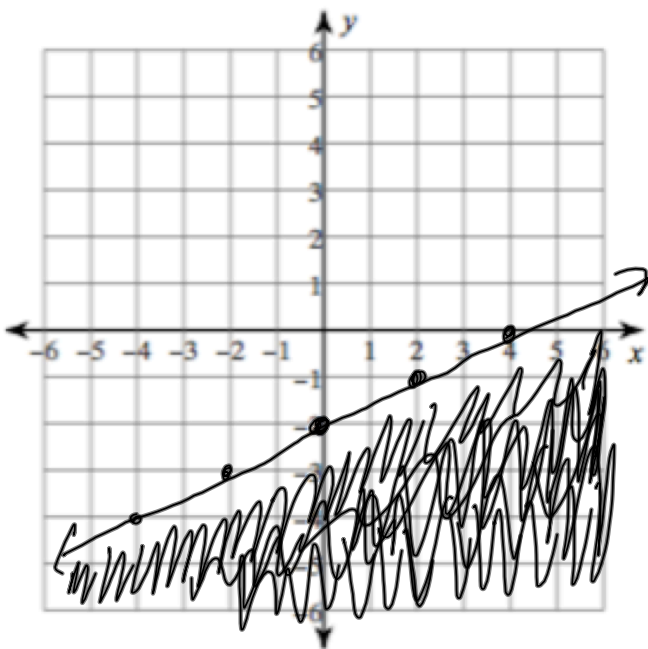


14) $y \geq 4x + 4$



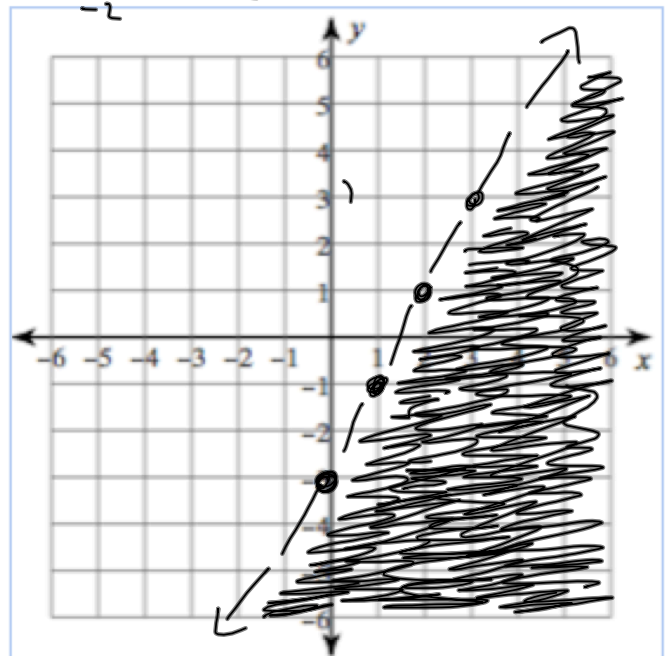
15) $\frac{4y}{4} \leq \frac{2x-8}{4}$

$y \leq \frac{1}{2}x - 2$



16) $4x - 2y > 6$

$\frac{-4x}{-2} > \frac{-4x+6}{-2} \rightarrow y < 2x - 3$



UNIT 7 Solve Linear Inequalities

Applications

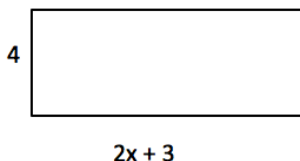
2 POINTS FOR EACH PART!

1) ~~perimeter~~ < 25



$$\begin{aligned} 7 + 12 + x &< 25 \\ 19 + x &< 25 \\ x &< 6 \end{aligned}$$

2) area < 92



$$\begin{aligned} 4(2x + 3) &< 92 \\ 8x + 12 &< 92 \\ 8x &< 80 \\ x &< 10 \end{aligned}$$

3) Mr. ~~Brust~~ is speed eating spring rolls. He's eaten 8 and continues to eat 4.5 every minute. He needs to eat no less than 44 to tie Mr. Bean's record.

a) Write an inequality for the above situation.

$$8 + 4.5x \geq 44$$

b) Solve your inequality.

$$4.5x \geq 36$$

$$x \geq 8 \text{ min}$$

4) Mr. Kelly has 33 marbles. Sully bets him that he can't say the alphabet backwards. If Mr. Kelly wins he gets 13 more marbles from Sully. If he loses he has to give 13 marbles to ~~Sully~~.

a) Write an absolute value equation for the above situation.

$$|x - 33| = 13$$

b) Solve your equation.

$$x - 33 = 13$$

or

$$x - 33 = -13$$

$$x = 46 \text{ marbles}$$

$$x = 20 \text{ marbles}$$

5) Mr. Bean loves DR. PEPPER. He can never decide which size to get when he goes to the store. He can buy a large DR. PEPPER for \$3 and he can buy a regular DR. PEPPER for \$1. He goes in with 63.

- a) Write an inequality with x representing the number of large DR. PEPPER's and y representing the number of regular DR. PEPPER's that Mr. Bean can buy.

$$3x + y \leq 63$$

- b) Would he be able to buy 18 large and 20 regular DR. PEPPER's?

$$3(18) + 20 \leq 63 \quad ??$$

$$54 + 20 \leq 63$$

$$74 \leq 63 \quad X$$

NO HE COULDN'T

- c) How many regular DR. PEPPER's would Mr. Bean be able to buy if he bought 13 large Dr. Peppers?

$$3(13) + y \leq 63$$

$$39 + y \leq 63$$

$$y \leq 24 \text{ Regular Dr Peppers}$$

- d) Graph the inequality from A.

$$3x + y \leq 63$$

$$\text{x-int (y=0)}$$

$$3x \leq 63$$

$$x \leq 21$$

$$\text{y-int (x=0)}$$

$$y \leq 63$$

