

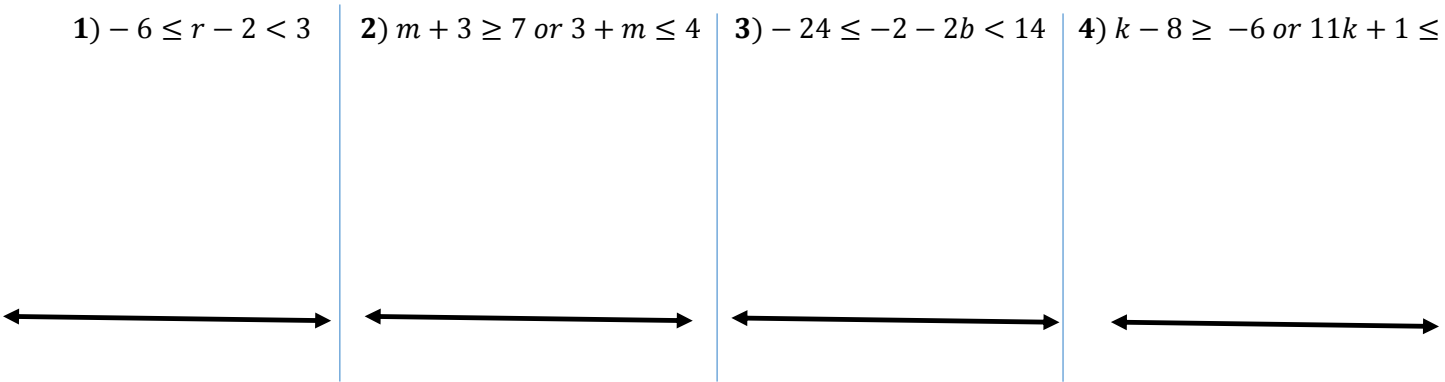
Linear Review

Name _____

Warm Up:

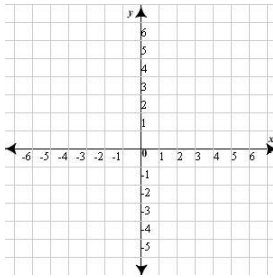
Solve and graph (on a number line) each compound inequality:

1) $-6 \leq r - 2 < 3$ 2) $m + 3 \geq 7$ or $3 + m \leq 4$ 3) $-24 \leq -2 - 2b < 14$ 4) $k - 8 \geq -6$ or $11k + 1 \leq -98$

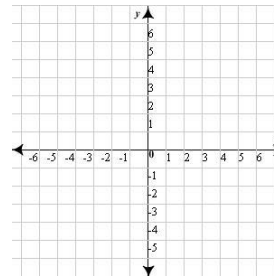


Sketch the solution to each system of inequalities:

5) $\begin{cases} y \leq \frac{1}{2}x + 2 \\ y < -2x - 3 \end{cases}$



6) $\begin{cases} y \leq \frac{1}{2}x - 1 \\ y < 2x + 2 \end{cases}$



Solve the system by elimination:

7) $\begin{cases} -2x - 3y - 2z = -11 \\ 5x - 3y + z = 25 \\ -5x - 2y - 3z = -26 \end{cases}$

Guide Notes:

Linear Inequalities

Example:

Any algebra happening to the middle needs be " _____ " on both sides. $5 \leq \frac{x}{3} + 5 < 6$

Make sure to pay attention to _____.

Remember _____ are _____ circles and _____ are _____ circles.

If you multiply or divide by a _____, then you must _____ the inequality symbol.

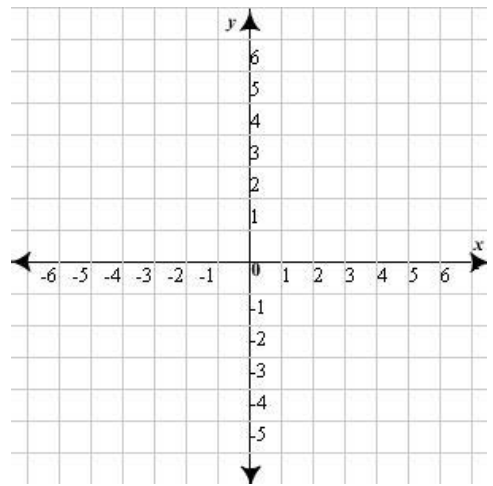
1 - 4 on warm up.



Graphing Linear Inequalities

Graph the following system of inequalities:

$$\begin{cases} y \leq \frac{1}{2}x - 3 \\ 3x + 2y > 4 \end{cases}$$



Easiest way to graph: Point, intercept:

- 1) Find the _____
- 2) Find the _____

If the equation is not written in $y=mx+b$ form; you must _____ the equation to solve for _____.

- _____ are dotted lines
- _____ are solid lines
- Shade “_____” for less than.
- Shade “_____” for greater than

#5 & 6 on warm up

Solve the System of equations (with three variables)

$$x - 3y + 3z = -4$$

$$2x + 3y - z = 15$$

$$4x - 3y - z = 19$$

You can solve this easily using _____ functions on your _____.

Process

- 1) Create _____ matrices (coefficients and answers)
- 2) Multiply the _____ of the coefficients matrix by the _____

$$A^{-1} * B$$

Your calculator spits out the solutions for x, y, and z!

#7 on warm up

Practice Problems:

Solve and graph the following inequalities:

1. $0 \leq -6a \leq 6$

2. $m + 3 < 4$ or $m + 3 > 8$

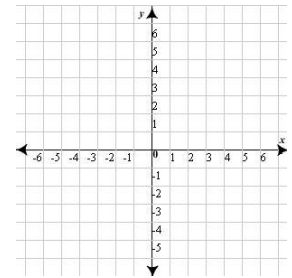
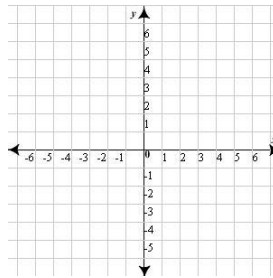
3. $6r + 2 < -52$ or $10r - 10 \geq 60$



4. $-20 \leq -2 + 3n < 22$

5. $y \geq \frac{3}{2}x + 3$

6. $8x + y < 4$

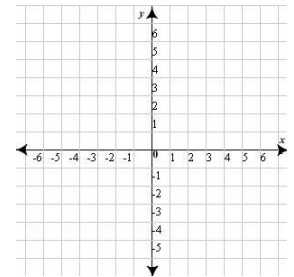
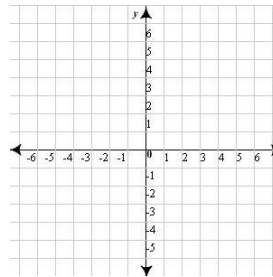
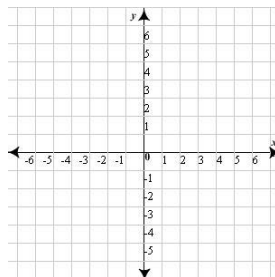
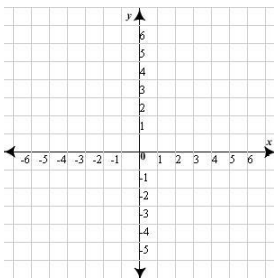


7. $y < -\frac{1}{2}x - 2$
 $y \geq -\frac{5}{2}x + 2$

8. $y < -\frac{3}{2}x - 1$
 $y \geq -\frac{3}{2}x - 3$

9. $2x - y \geq 1$
 $2x - y < -2$

10. $x - y < 2$
 $x \leq 3$



Solve each System:

11. $x + 5y - 2z = -3$
 $5y + z = -14$
 $-3x - 6y + z = 11$

12. $x + 5y + 3z = 2$
 $-5x + 3y + 6z = -3$
 $-6x - 3y - z = 11$

13. $a = -6b + 5c - 6$
 $2a - 5c = -2$
 $b = -2$

$$3x - z = -2$$

$$14. -3x - 4y - 3z = -6$$

$$-x + 6y - 6z = -12$$

$$r - 4s - t = 1$$

$$15. 2r + 3s + 4t = -27$$

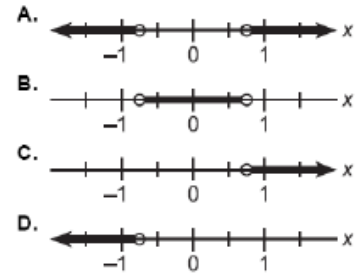
$$-5r - 2s + 2t = 26$$

$$-4x + y + 3z = 22$$

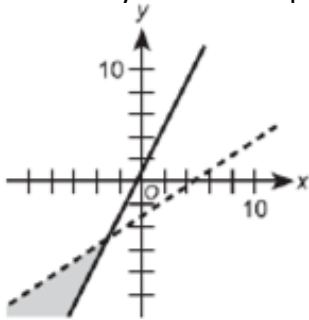
$$16. x + 5y + z = -2$$

$$6x + 3z = 3$$

17. Which graph represents the solution set to $4|x| - 3 > 0$?



18. Which system of inequalities describes this graph?



- A. $y > 2x + 1$ and $y \leq \frac{2}{3}x - 3$
- B. $y < 2x + 1$ and $y \leq \frac{2}{3}x - 3$
- C. $y \geq 2x + 1$ and $y < \frac{2}{3}x - 3$
- D. $y \leq 2x + 1$ and $y > \frac{2}{3}x - 3$

19. What is the solution set to this inequality?

$$x^2 - 6x + 7 \leq 2x - 5$$

- A. $\{x \mid x \leq 2 \text{ or } x \geq 6\}$
- B. $\{x \mid x < 2 \text{ or } x > 6\}$
- C. $\{x \mid 2 \leq x \leq 6\}$
- D. $\{x \mid 2 < x < 6\}$

20. Kickball games last a maximum of 60 minutes and ties are allowed. However, there is a "mercy" rule. A game will end if at least 40 minutes have passed and one team is ahead by at least 10 points. If t is time, in minutes, and d is the difference in points, what compound inequality describes the "mercy" rule?

- A. $t \geq 40$ and $d \geq 10$
- B. $40 \leq t < 60$ and $d \geq 10$
- C. $t \leq 40$ or $d \geq 10$
- D. $40 \leq t < 60$ or $d \geq 10$

Answers:

1) $-1 \leq a \leq 0$ 2) $m < 1$ or $m > 5$ 3) $r < -9$ or $r \geq 7$ 4) $-6 \leq n < 8$

5) 6) 7) 8) 9)

10) 11) $(-1, -2, -4)$ 12) $(-3, 4, -5)$ 13) $(-8, -2, -2.8)$

14) $(0, 0, 2)$ 15) $(-6, -1, -3)$ 16) $(-2, -1, 5)$ 17) A 18) C 19) C 20) B