

Name: key

Date: _____

Algebra I Midterm Review 5

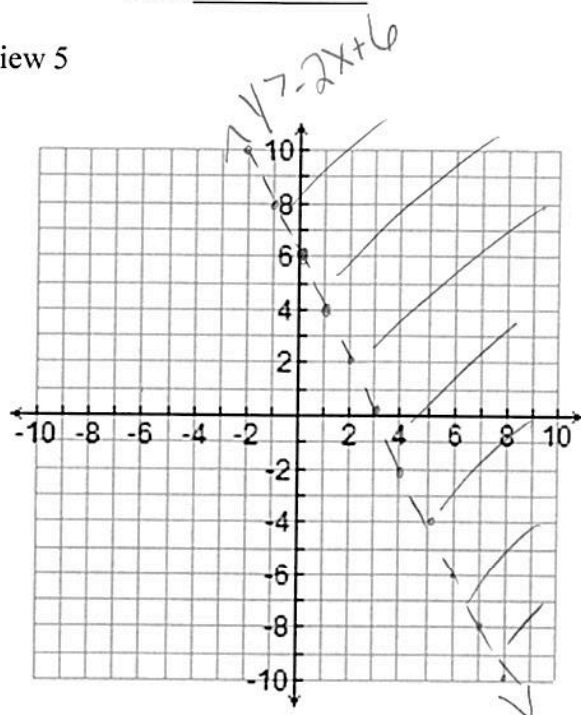
1. Graph the following inequality on the graph provided.

$$-3y + 18 < 6x$$

$$-18 \quad -18$$

$$\frac{-3y < 6x - 18}{-3 \quad -3}$$

$$y > -2x + 6$$



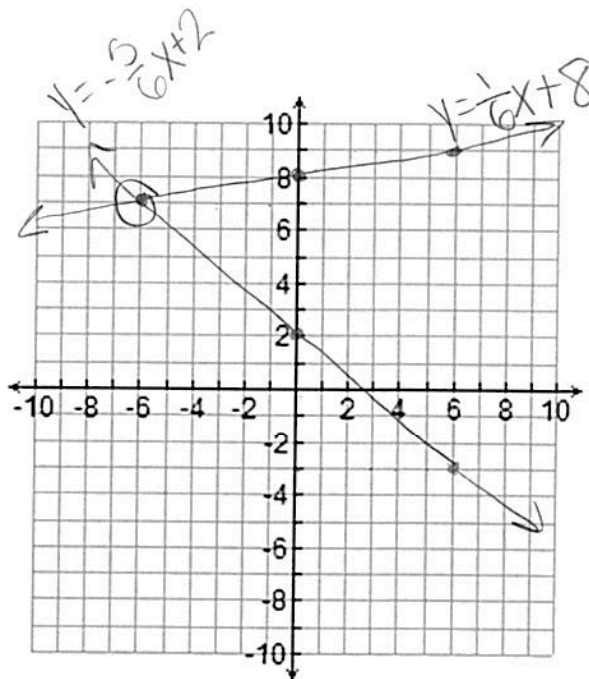
Would (-6, 1) be a solution to this inequality?

NO

2. Graph the following equations on the provided graph.

$$y = -\frac{5}{6}x + 2$$

$$y = \frac{1}{6}x + 8$$



State the point of intersection.

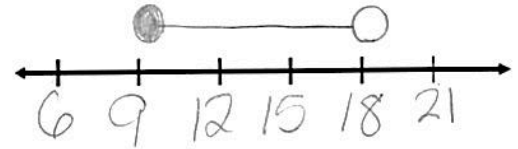
$(-6, 7)$

3. Solve and graph your solution on a number line.

$$3 \leq x - 6 < 12$$

$$\begin{array}{r} 3x - 6 \\ +6 \quad +6 \\ \hline 9 \leq x \end{array}$$

$$\begin{array}{r} x - 6 < 12 \\ +6 \quad +6 \\ \hline x < 18 \end{array}$$



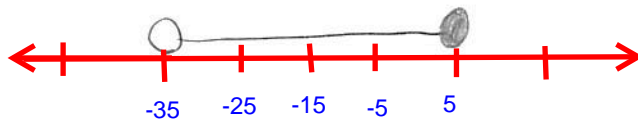
4. Solve the inequality below.

$$\begin{array}{l} x - 2 \leq 3 \\ +2 \quad +2 \\ \hline x \leq 5 \end{array} \quad \text{and} \quad \begin{array}{l} \frac{x}{7} > -5 \quad (7) \\ \hline x > -35 \end{array}$$

a. State your solution in interval notation.

$$(-35, 5]$$

b. Graph your solution on a number line.



5. Dylan has a bank that sorts coin as they are dropped into it. A panel on the front displays the total number of coin inside as well as the total value of these coins. The panel show 90 coins with a value of \$17.55 inside the bank.

- a. If Dylan only collects dimes and quarters, write a system of equations in two variables or an equation in one variable that could be used to model this situation.

$$\begin{aligned} x + y &= 90 \\ .1x + .25y &= 17.55 \end{aligned}$$

Let $x = \#$ of dimes
Let $y = \#$ of quarters

- b. Using your equation or system of equation, algebraically determine the number of quarters Dylan has in his bank.

$$.1x + .25y = 17.55$$

$$x + y = 90$$

$$\begin{array}{r} x + y = 90 \\ -y \quad -y \\ \hline x = 90 - y \end{array}$$

$$.1(90 - y) + .25y = 17.55$$

$$.9 - .1y + .25y = 17.55$$

$$- .1y + .25y = 8.55$$

$$\begin{array}{r} .15y = 8.55 \\ \hline .15 \quad .15 \\ \hline y = 57 \end{array}$$

$$y = 57 \text{ quarters}$$

6. The school that Julia goes to is selling tickets to a choral performance. On the first day of ticket sales the school sold 3 senior citizen tickets and 1 child ticket for a total of \$38. The school took in \$52 on the second day by selling 3 senior citizen tickets and 2 child tickets. Find the price of a senior citizen ticket and the price of a child ticket.

$$\begin{array}{r} 3S + C = 38 \\ -(3S + 2C = 52) \\ \hline \end{array}$$

$$\begin{array}{r} 3S + C = 38 \\ -3S - 2C = -52 \\ \hline \end{array}$$

$$\begin{array}{r} -C = -14 \\ \hline -1 \end{array}$$

$$C = \$14$$

$$\begin{array}{r} 3S + 14 = 38 \\ -14 \quad -14 \\ \hline 3S = 24 \\ \frac{3S}{3} = \frac{24}{3} \\ S = \$8 \end{array}$$

senior ticket: \$8
child ticket: \$14

7. Using the volume formula of a cone, solve for r in terms of pi.

$$(3) V = \frac{1}{3} \pi r^2 h$$

$$\frac{3V}{\pi h} = \frac{\pi r^2 h}{\pi h}$$

$$\sqrt{\frac{3V}{\pi h}} = \sqrt{r^2}$$

$$r = \sqrt{\frac{3V}{\pi h}}$$

If the height of the cone is 5 and the volume of the cone is 38, what is the radius of the cone to the nearest tenth?

$$r = \sqrt{\frac{3(38)}{\pi(5)}} = 2.693968338\dots$$

↑

2.7
