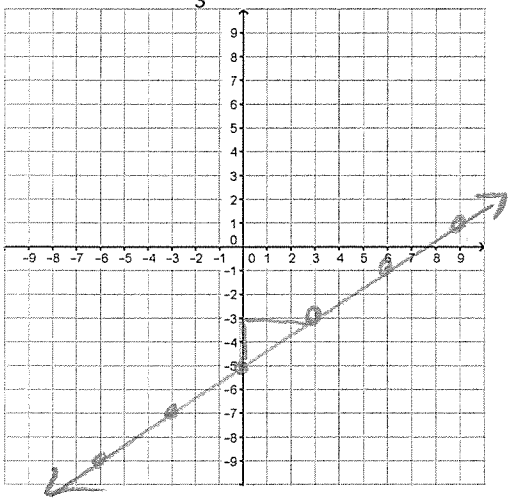
Sample Module 1 Group Test

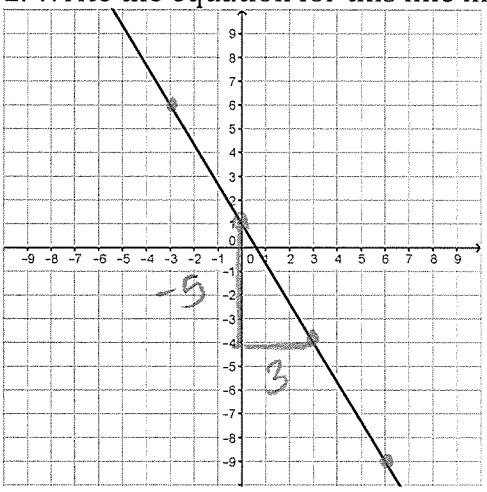
Graph Linear Equations and Patterns

Name: Key

1. Graph $y = \frac{2}{3}x - 5$

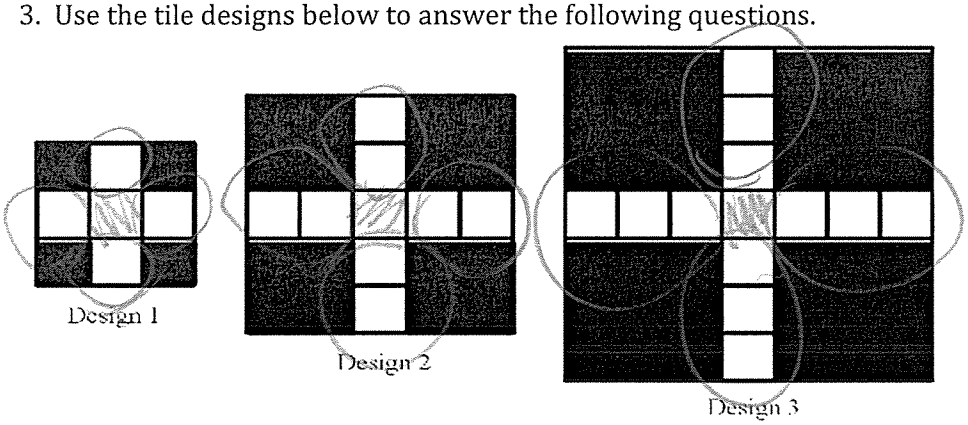


2. Write the equation for this line in slope intercept form



$y = \frac{-5}{3}x + 1$

3. Use the tile designs below to answer the following questions.



a. How many white tiles would be found in Design 50?

201 tiles

b. Write an expression that would help you calculate the number of tiles in Design *n*.

$4n + 1$

c. The white tiles represent a beautiful and expensive marble tile. You cannot afford to buy any more than 100 tiles. Which is the largest design you can afford?

$100 = 4n + 1$

$99 = 4n$

$24.75 = n$

at most design 24

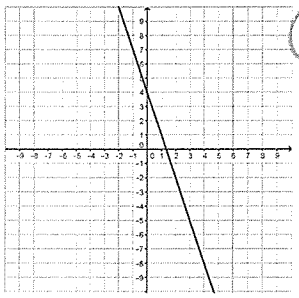
Part I: Multiple Choice

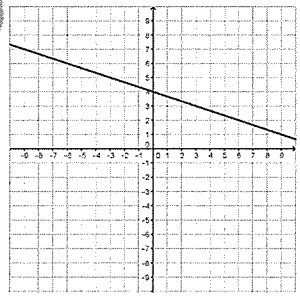
$2x+6y=24$

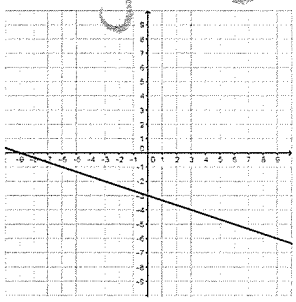
$\frac{6y}{6} = \frac{-2x+24}{6}$

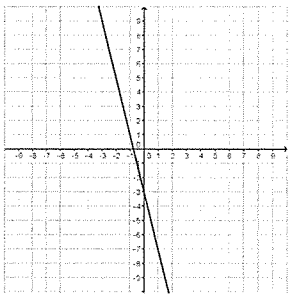
$y = -\frac{1}{3}x+4$

2. Which graph matches the equation $2x + 6y = 24$?

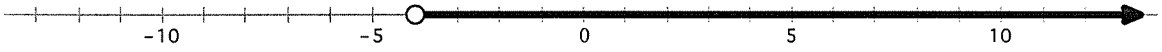
a. 

b. 

c. 

d. 

3. Which inequality is best represented by the following number line?



a. $10 < 22 + 3x$

b. $10 \leq 22 + 3x$

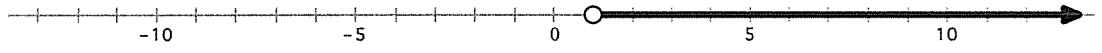
c. $10 > 22 + 3x$

d. $10 \geq 22 + 3x$

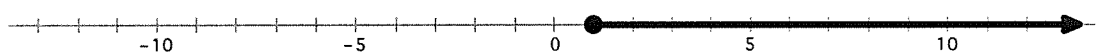
4. Which number line best represents the inequality $-4(x-2)+5<9$?

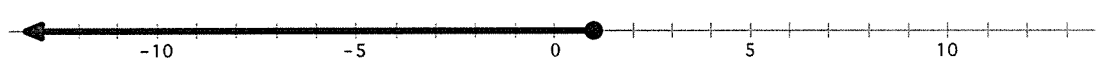
$-4(x-2)<4 \quad x-2>-1$

$x>1$

a. 

b. 

c. 

d. 

5. If you solve the equation $3x + 5y = 20$ for y, what would you get?

$5y = -3x+20$

$y = -\frac{3}{5}x+4$

For questions 6 – 7, use the following scenario:

Willow is driving on the freeway. She just passed mile marker 325. The fastest she will drive is 75 miles per hour, though, there is a bit of traffic that might slow her down a bit, but she doesn't know exactly how much. The mile markers are increasing on her route.

6. If y is Willow's speed, what is the inequality that a represents Willow's speed?

a. $y < 75$ b. $y > 75$ c. $y \leq 75$ d. $y \geq 75$

7. The expression $325 + 2y$ represents what mile marker she's at after 2 hours, depending on traffic. Which inequality describes the mile marker she would be at this point?

a. $325 + 2y < 475$ b. $325 + 2y > 475$ c. $325 + 2y \leq 475$ d. $325 + 2y \geq 475$

Part II: Free Response

8. Find all of the values of x that make the following inequality true. Write your answer as an inequality.

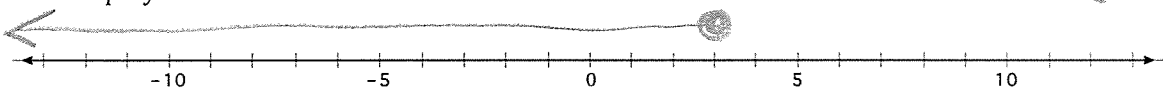
$$2(x + 5) \geq 4x + 4.$$

$2x+10 \geq 4x+4$

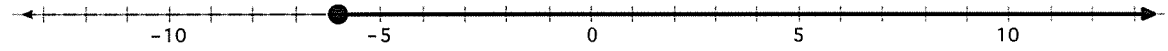
$6 \geq 2x$

$3 \geq x$ or $x \leq 3$

9. Graph your answer from number 8 on the number line below.



11. Write the inequality represented by this number line and create a scenario that might match it.



Inequality: $x \geq -6$

Scenario: It is at least -6 degrees Celsius

13. Rewrite the following equation in slope-intercept form ($y = mx + b$), then graph it below.

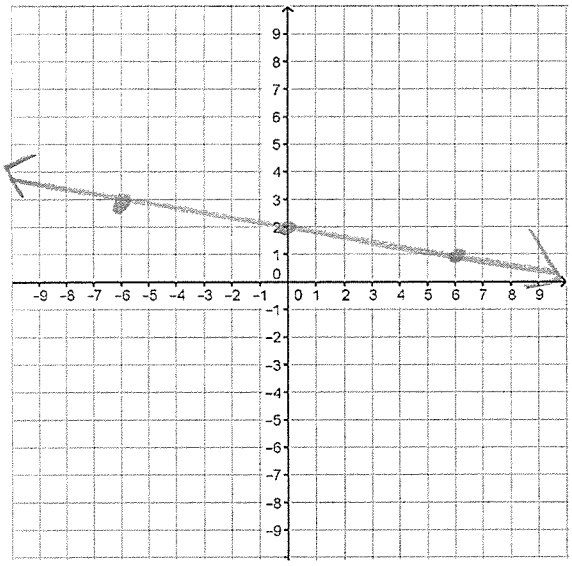
$12y + 2x = 24$

Slope: $-1/6$ y-intercept: 2

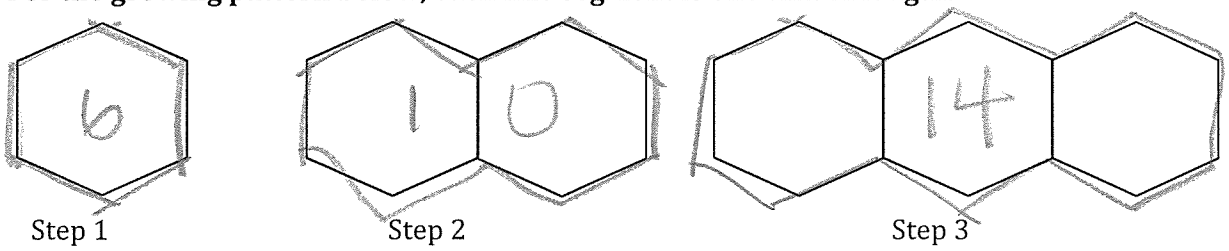
Slope-Intercept form: $y = -\frac{1}{6}x + 2$

$12y + 2x = 24$

$\frac{12y}{12} = \frac{-2x + 24}{12}$



15. For the growing pattern below, each line segment is one unit in length.



Step 1 Step 2 Step 3

a. How much total ***perimeter*** in Step 5? (Remember to focus on the **perimeter**.)

22

b. How can you determine the amount of perimeter in Step 25?

- draw - table $4n+2$

c. Write a rule to predict the total amount of perimeter for any step. Show how your rule relates to the pattern.

$4n+2$