Unit 4: Inequalities Test

Name Key

Date: _____ Algebra: ____

Complete all problems on this piece of paper. SHOW ALL OF YOUR WORK and circle your answers!

Solve the following inequality for the given variable and graph the solutions on the number line provided.

(4) 1. $-2m - 4 \geq 3m + 6$

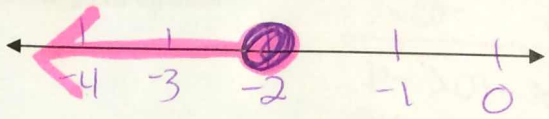
$-3m \quad -3m$

$-5m - 4 \geq 6$

$+4 \quad +4$

$\frac{-5m}{-5} \geq \frac{10}{-5}$

$m \leq -2$



(6) 2. Tommy makes $10 for every dog he walks. Tommy wants to buy an iPad that costs $300. He already has $75 in the bank. What is the minimum number of dogs he needs to walk to have enough money to buy the iPad?

a. define a variable that represents this situation: d = # of dog walks.

b. Use your variable to write an inequality for the situation: $300 \leq 75 + 10d$

c. Solve the inequality.

$300 \leq 75 + 10d$

$-75 \quad -75$

$\frac{225}{10} \leq \frac{10d}{10}$

$22.5 \leq d$

d. Answer the question in a full sentence, be sure to use at least/at most language.

Tommy must walk at least 23 dogs.

3. Solve and graph the following inequalities.

$$7x - 10 < 10x - 4 < 4x + 2$$

$7x-10<10x-4$

$-10x \quad -10x$

$-3x-10<-4$

$+10 \quad +10$

$\frac{-3x}{-3} < \frac{6}{-3}$

$x > -2$

$10x-4<4x+2$

$-4x \quad -4x$

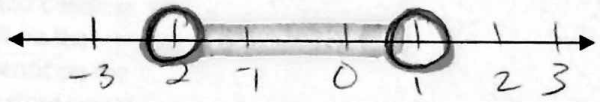
$6x-4<2$

$+4 \quad +4$

$\frac{6x}{6} < \frac{6}{6}$

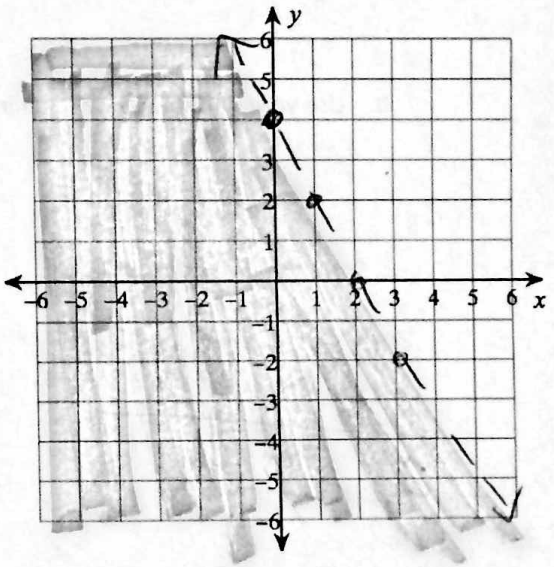
$x<1$

$-2<x<1$



4. Graph the following inequality:

$y < -2x + 4$



a. Is the origin part of the solution set?

yes

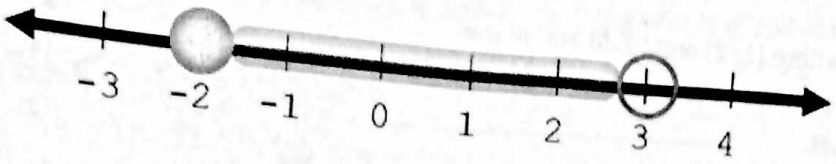
b. Are the points on the line part of the solution set?

no

c. Given an example of a point that is NOT in the solution set.

(3,3)

(4) 5. Examine the graph of the inequality below.



a. Write an inequality that represents the situation pictured above.

$-2 \leq x < 3$

b. What is an example of a solution to the inequality? 0

(6) 6. Consider the inequality: $8x + 2y \leq 4$

$-8x \quad -8x$

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

$y \leq -4x+2$

a) Is the point (1, -2) part of the solution set? Show all work.

$1 \leq -4(1) + 2$

$-4+2$

$-2 \leq -2$ Yes!! ~~Not true~~

~~so (1, -2) is not part of the solution set.~~

b) Give an example of a different point that is not part of the solution set. Explain how you know that it is not part of the solution.

$x = 3$

$y \leq -4x+2$

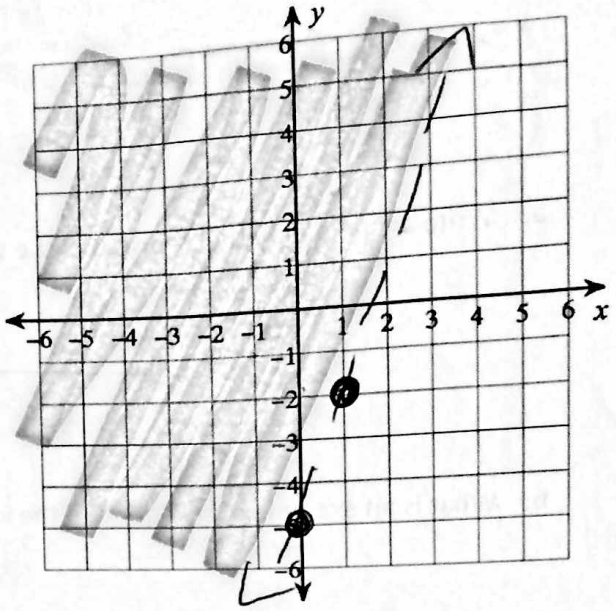
$\leq -4(3)+2$

$-12+2$

$y \leq -10$

the point (3, -8)

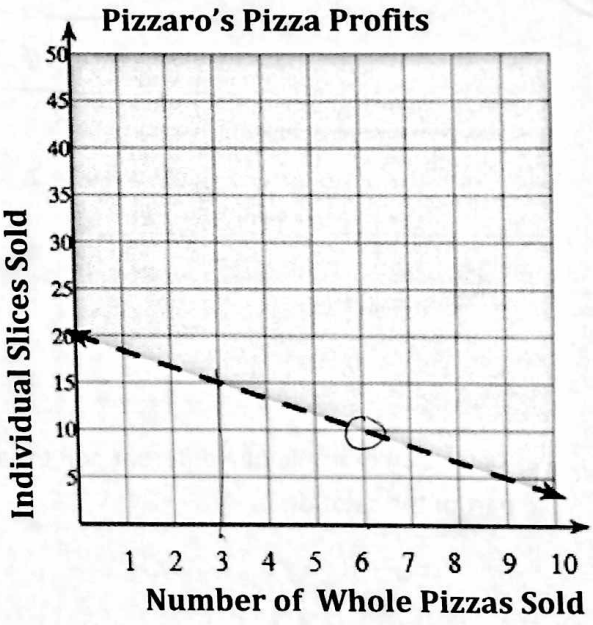
(5) 6. Graph an inequality where (1,-2) and (0,-5) are on the boundary line but NOT part of the solution set and the origin IS part of the solution set.



Write the inequality in slope-intercept form.

$y > 3x - 5$

(6) 7. The graph to the right shows how many whole pizzas and individual slices Pizzaro's Pizza must sell PER HOUR to make a profit.



a. If the pizza shop sells 6 pizzas and 10 slices, do they earn a profit? Explain.

No, they just break even.

b. If the Pizza shop only sells 3 pizzas in an hour, how many slices do they need to sell to earn a profit? (your answer should be an inequality OR use at least/at most language)

at least 16 slices.

c. If Pizzaro's sells each slice for $2, what is the minimums amount of money they must maker per hour to earn a profit?

20 slices = $40 they must earn more than $40.

8. Maya is buying drinks for her advisory's potluck. She only wants to spend $25. She spent $6 on bottles of water and $5 on cups. The bodega sells 2-liter bottles of soda for $2.50 each. How many bottles of soda can she buy and still stay in budget?

a) Define a variable: ~~P + 2.50~~

x = # of 2-liter bottles

b) Write an inequality that represents this situation: $25 \geq 11 + 2.50x$

c) Solve your inequality:

$25 \geq 11 + 2.50x$

$-11 \quad -11$

$14 \geq +2.50x$

$\frac{14}{2.5} \geq \frac{+2.50x}{2.5}$

$5.6 \geq x.$

d) Answer the question in a full sentence.

She can buy at most ~~5.6~~ 5 bottles of soda.

e) How much money will Maya have leftover if she buys the number of bottles of soda that you suggested?

$6 + 5 + 5(2.50)$

$11 + 10 = 21.50$

12.50

She will have ~~$11~~ $1.50 left over

This page contains Regents Prep Multiple Choice Questions. Be sure to choose only one answer choice.

(2) 9. Consider the inequality $5 \geq x > 12$. Which of the following is true? (Choose only one)

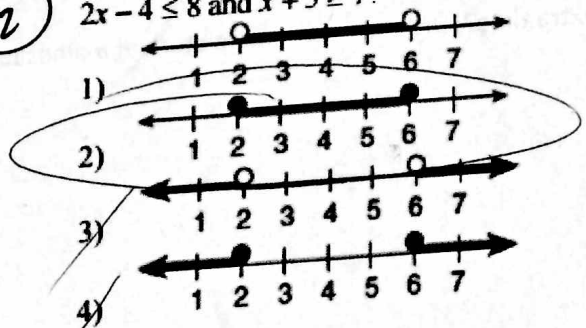
a. x could be 10

b. x could be infinitely many numbers

c. there is no solution to this inequality

d. x could be 7

(2) 10. Which graph represents the solution set for $2x - 4 \leq 8$ and $x + 5 \geq 7$?



$2x - 4 \leq 8$

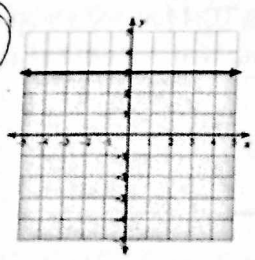
$+4 \quad +4$

$2x \leq 12$

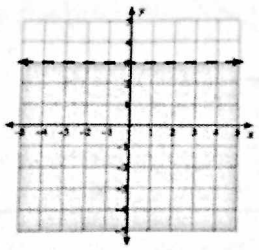
$x \leq 6$

11. Which of the following is the graph of $f(x) \leq 3$?

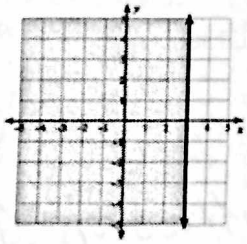
A)



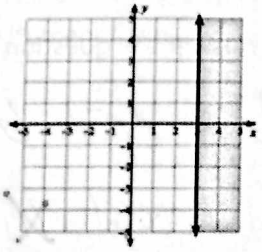
C)



B)



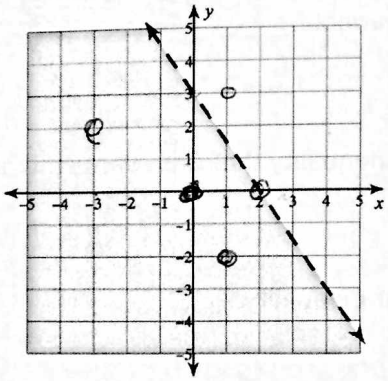
D)



12. An electronics store sells DVD players and cordless telephones. The store makes a \$75 profit on the sale of each DVD player (d) and a \$30 profit on the sale of each cordless telephone (c). The store wants to make a profit of at least \$255.00 from its sales of DVD players and cordless phones. Which inequality describes this situation?

1) $75d + 30c < 255$
2) $75d + 30c \leq 255$
3) $75d + 30c \geq 255$
4) $75d + 30c \geq 255$

13. Circle ALL points that are solutions to the inequality shown on the graph below: (***you should cirlce more than one answer choice for this question!)***



a. (0, 0)

b. (1, 3)

c. (1, -2)

d. (-3, 2)

e. (2,0)

f. (0, 3)

Have extra time? Draw an awesome picture of a dinosaur: