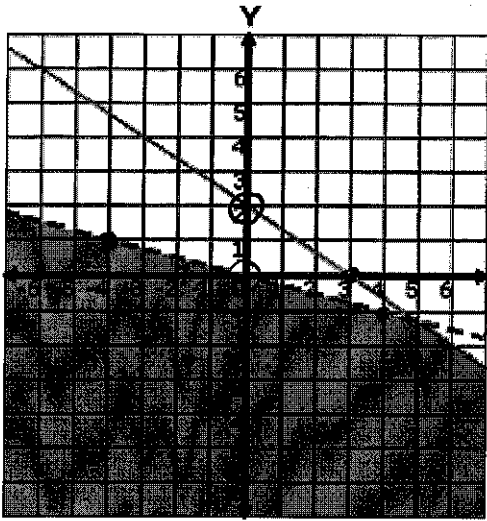


Math 1: Unit 10 Study Guide: Inequalities

1. Which systems of inequalities matches the graph provided?

- A. $y \leq -2/3x + 2$ $y < -1/4x$
~~B. $y < -3/2x + 3$ $y > -1/4x$~~
~~C. $y \leq -2x + 3$ $y < -4x$~~
 D. $y \leq -2/3x + 2$ $y \leq 1/4x$



dotted line
Shaded down so,
 $y <$

slope: $\frac{\text{rise}}{\text{run}} = -\frac{1}{4}$
y-int: 0

$y < -\frac{1}{4}x + 0$
 $y < -\frac{1}{4}x$

Solid line
Shaded down so
 $y \leq$

Slope: $\frac{\text{rise}}{\text{run}} = -\frac{2}{3}$
y-int: where line touches: 2
y-axis

$y \leq -\frac{2}{3}x + 2$

So not B or C

2. Is $(-2, 3)$ a solution of the given system:

$2x - y \leq 0$
 $2y - x \geq -4$
 $x < 4 - y$

To be a solution,
 $(-2, 3)$ must work
for all 3 inequalities

$2x - y \leq 0$
 $2(-2) - (3) \leq 0$
 $-4 - 3 \leq 0$
 $-7 \leq 0$
 ✓

$2y - x \geq -4$
 $2(3) - (-2) \geq -4$
 $6 + 2 \geq -4$
 $8 \geq -4$
 ✓

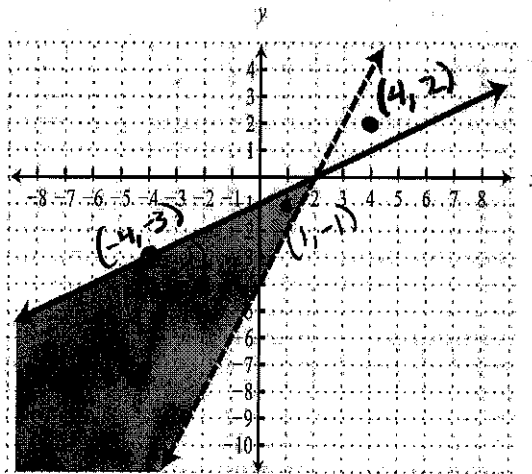
$x < 4 - y$
 $-2 < 4 - (3)$
 $-2 < 1$
 ✓

So... **yes it is a solution!**

3. Which is not a solution to the graph.

- a. $(-2, -4)$ b. $(4, 2)$
 c. $(-4, -3)$ d. $(1, -1)$

(B) is NOT
in the
Shaded
Region



4. The owner of Gibby's Fish Fry orders flounder and perch. He wants to buy at least 75 pounds of fish but cannot spend more than \$550. Flounder is \$10.00 per pound and perch is \$6.00 per pound. Write a system of inequalities to model this scenario.

What do we need to find?
 # of pounds of flounder = f
 # of pounds of perch = p

What do we know?

system means \geq inequalities
 pounds ≥ 75 $f + p \leq 550$

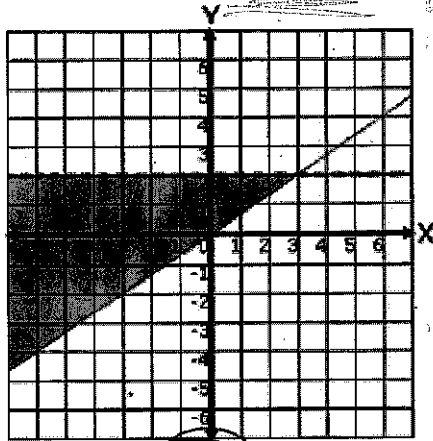
$f + p \geq 75$
 $10f + 6p \leq 550$

* remember that
 * like things go in
 the same inequalities
 10 and 6 are \$ so
 they go with \$550
 f and p are pounds

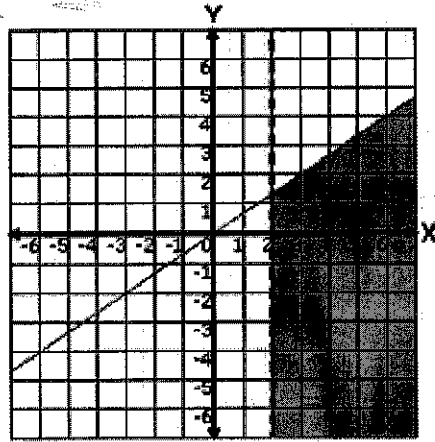
5. Which is the graph of the solution set of the system of inequalities?

$y \geq \frac{2}{3}x$ solid line, shaded up, + slope

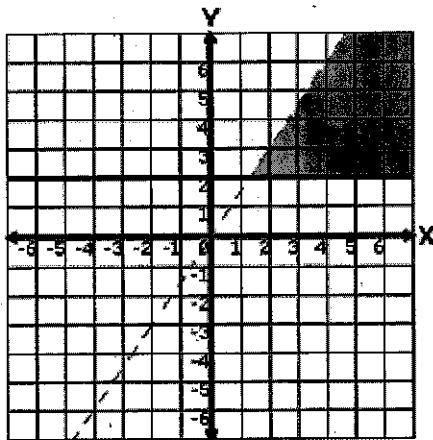
$y < 2$ dotted line, shaded down, horizontal line (y go skiing?)



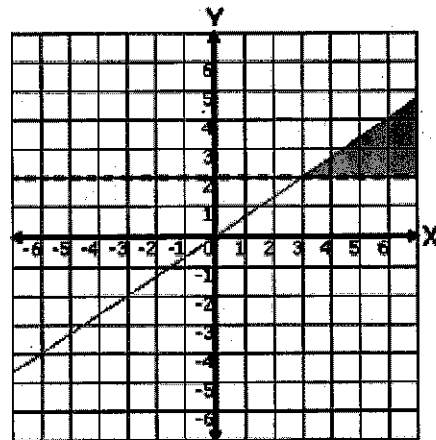
W.



X.



Y.



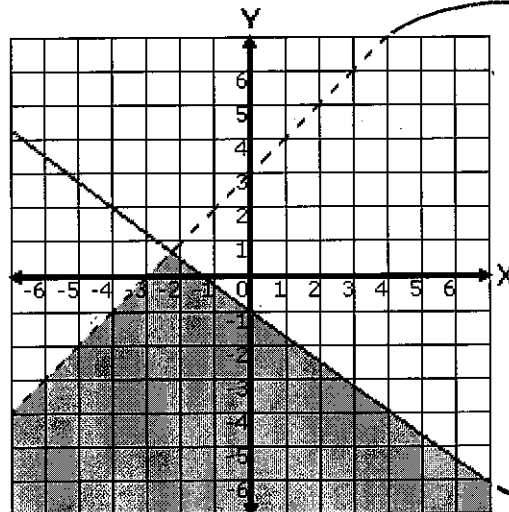
Z.

6. Which system is graphed to the right?

A. $x - y > -3$
 $3x + 4y \leq -4$

~~B. $y > x + 3$
 $y \leq 4x - 1$~~

~~C. $y - x > -3$
 $2x + 4y \leq 4$~~



dotted shaded down $y <$

A. $x - y > -3$ $3x + 4y \leq -4$
 $-x \quad -x$ $-3x \quad -3x$

 $-y > -x - 3$ $\frac{4y}{4} \leq \frac{-3x - 4}{4}$
 $-1 \quad -1 \quad -1$ $y \leq \frac{-3x - 4}{4}$
 $y < x + 3$ $y \leq \frac{-3x}{4} - 1$

C. $y - x > -3$ $2x + 4y \leq 4$
 $+x \quad +x$ $-2x \quad -2x$

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

Solid shaded down $y \leq$

So not B or C

So A is the answer

7. Northcross Bowling charges a \$50 flat fee for a birthday party rental and \$4 for each person to bowl. Gary can spend at most 100 dollars for his party. Write an inequality that models this situation

at most 100 # of people = p
 ≤ 100

$$50 + 4p \leq 100$$

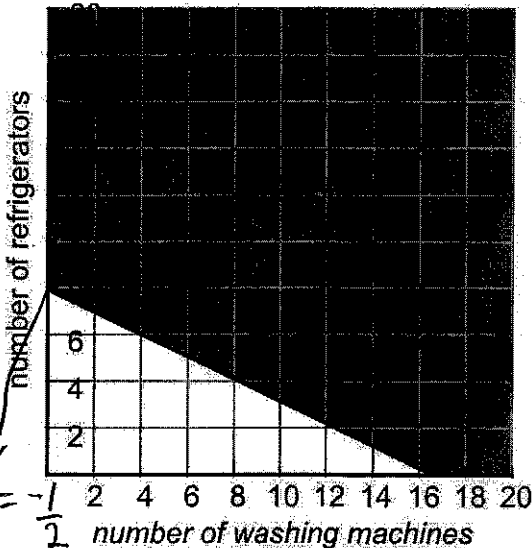
or

$$4p + 50 \leq 100$$

8.

- A. Two times the number of refrigerators, y , plus the number of washing machines, x , is at least 16.
- B. Two times the number of refrigerators, y , plus the number of washing machines, x , is at least 8.
- C. Two times the number of refrigerators, y , minus the number of washing machines, x , is at least 16.
- D. Two times the number of refrigerators, y , minus the number of washing machines, x , is at least 8.

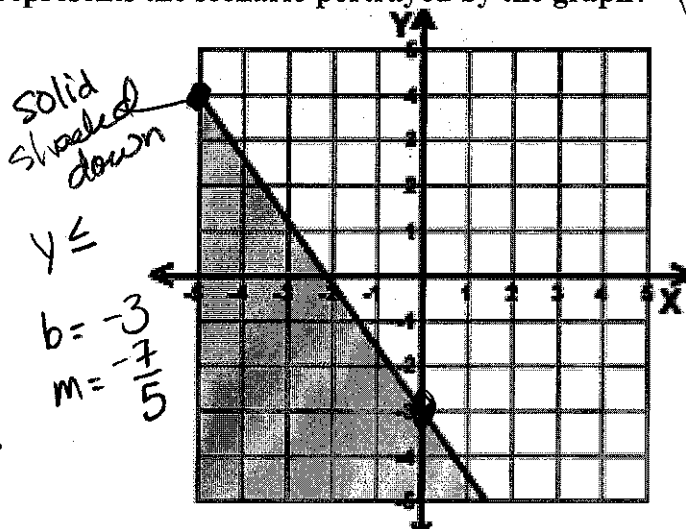
- (A) $2y + x \geq 16$**
- (B) $2y + x \geq 8$
- (C) $2y - x \geq 16$
- (D) $2y - x \geq 8$



Solid shaded
 $m = -\frac{1}{2}$
 $b = 8$
 $y \geq -\frac{1}{2}x + 8$

* multiply by 2
 b/c none of the equations have a fraction
 $2(y + \frac{1}{2}x \geq 8)$
 $2y + x \geq 16$
 matches A

9. Which inequality represents the scenario portrayed by the graph?



Solid shaded down
 $y \leq$
 $b = -3$
 $m = -\frac{3}{5}$

b/c y-int is -3

- ~~A. $y \leq -7/5x - 2$~~
- ~~B. $y \leq -5/7x - 3$
 $m = -7/5$ not $-5/7$~~
- ~~C. $y > 7/5x - 3$
 sign is not right~~
- (D. $y \leq -7/5x - 3$**

10. Given the following system of equations:

$$\begin{cases} x = 6y - 5 \\ -5x + 3y = -29 \end{cases}$$

What is the value of $x + y$?

use substitution

$$\begin{aligned} -5(6y - 5) + 3y &= -29 \\ -30y + 25 + 3y &= -29 \\ -27y + 25 &= -29 \\ -27y &= -54 \\ y &= 2 \end{aligned}$$

$$\begin{aligned} x &= 6(2) - 5 \\ x &= 12 - 5 \\ x &= 7 \end{aligned}$$

$$\begin{aligned} x + y \\ 7 + 2 \\ \hline 9 \end{aligned}$$

answer

