Unit 2B Practice Assessment | Coordinate Algebra

1. What is the solution to the system $\begin{cases} x + 2y = 15 \\ 2x + y = 9 \end{cases}$?

a. (1, 7) c. (7, 1)
b. Infinitely Many d. No Solution

(a)

$1 + 14 = 15$ ✓
$2 + 7 = 9$ ✓

$2y = -x + 16$
$y = -\frac{1}{2}x + 7.5$

b c

$7 + 2 \neq 15$
$14 + 1 \neq 9$

$y = -2x + 9$

2. What is the solution to the system $\begin{cases} 3x + 5y = 4 \\ -2x + 2y = 8 \end{cases}$?

a. (2, -2) c. (-2, 2)
b. Infinitely Many d. No Solution

(c)

$3(2) + 5(-2) = 4$
$6 + (-10) = 4$
$-4 \neq 4$

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

$2y = 2x + 8$
$y = x + 4$

(c)
$3(-2) + 5(2) = 4$
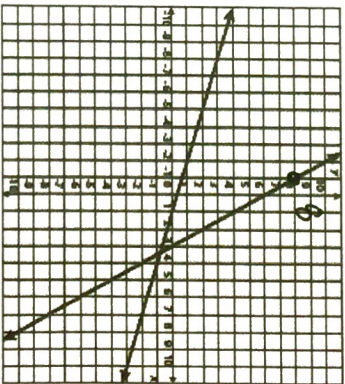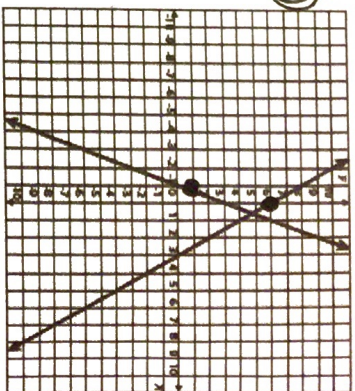$-6 + 10 = 4$
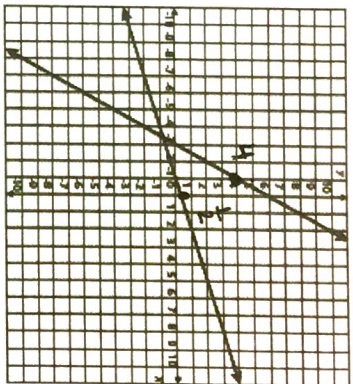$4 = 4$ ✓

$-2(-2) + 2(2) = 8$
$4 + 4 = 8$ ✓

3. Which graph represents the solution to the system $\begin{cases} 2x + y = 6 \\ -x + 3y = 1 \end{cases}$?

Check the b-values. (y-int)
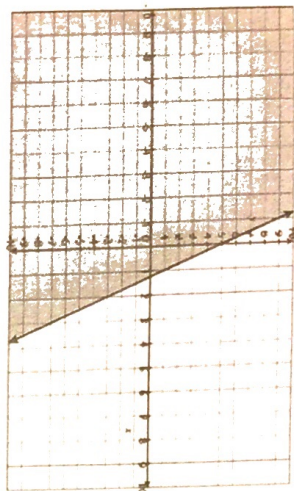$y = -2x + 6$
$3y = x + 1$
$y = \frac{1}{3}x + 1$
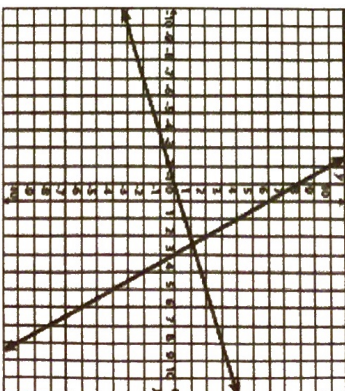
a.

b.

(c)

d.

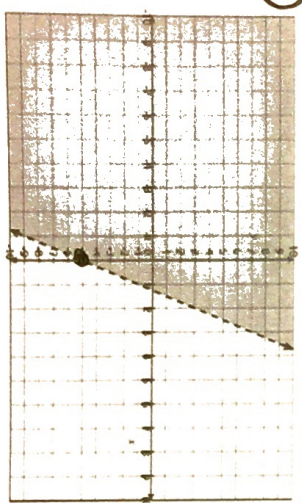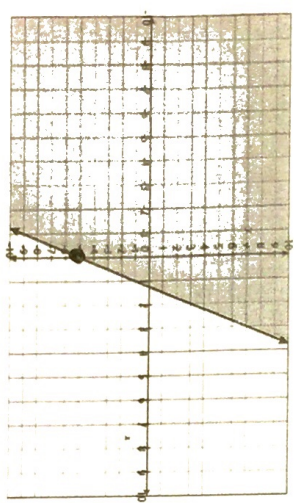4. Which graph represents the solution to the inequality $4x - y < 5$?

a.

b.

c.

d. (circled)

Handwritten work:
$$-y < -4x + 5$$
$$\boxed{y > 4x - 5}$$
↑ dashed line
b-value of -5
Shaded above
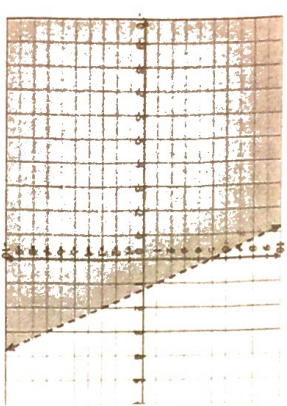
5. Which graph represents the solution to the following system of linear inequalities?

$$3x - 4y \leq 16$$
$$4x + 3y < 9$$

a. (checked)

b.

Handwritten work:

$\boxed{-4y \leq -3x + 16}$ → $\boxed{y \geq \frac{3}{4}x - 4}$

greater than

for b-values = -4
less than $-4y \leq -3x + 16$
bottom $y \geq \frac{3}{4}x - 4$
$= 3$

greater than

$3y < -4x + 9$ → $y < -\frac{4}{3}x + 3$
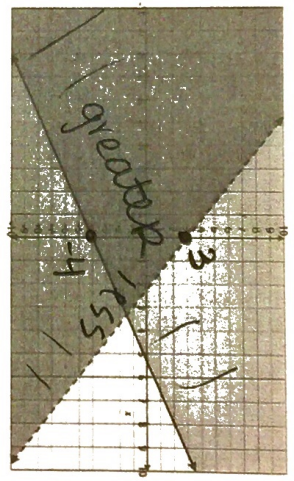
• one dashed
• one solid

$y < -\frac{4}{3}x + 3$
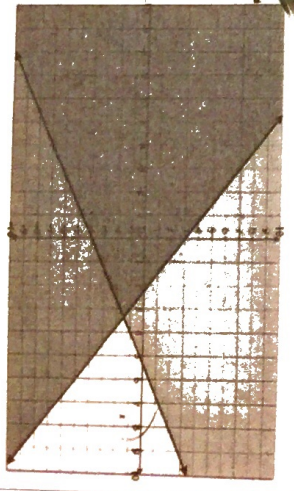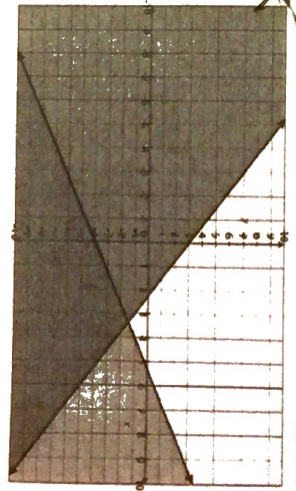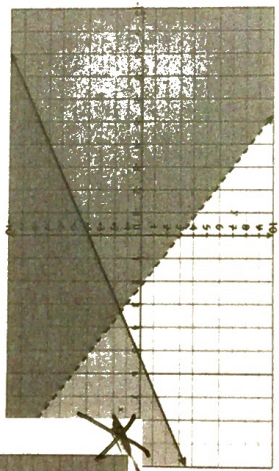
6. Which best describes $-3x + y = 12$; $y = 3x - 2$?

a. The system is not linear

b. One solution, lines not parallel

c. ~~Two solutions, lines are parallel~~

d. No solution, lines are parallel *(circled)*

$y = 3x + 12$ Same!
$y = 3x - 2$ Same Slope!

– parallel
– never intersect
so NO SOLUTIONS

7. The house painter mixed x gallons of blue paint with y gallons of green paint to create a unique color. Altogether he had 30 gallons of paint. He used 6 more gallons of blue than green paint. Which of the following is the solution to the system?

a. 18 gallons of green, 12 gallons of blue

b. 15 gallons of blue, 9 gallons of green

c. 17 gallons of blue, 13 gallons of green

d. 12 gallons of green, 18 gallons of blue *(circled)*

blue green
$x + y = 30$
$y + 6 = x$
$y + 6 + y = 30$
$2y = 24$
$y = 12$

8. Joe spent $7.75 to purchase 23 snacks for the club meeting. Chips are $0.25 and pretzels are $0.50. How many of each type of snack did Joe buy?

a. 8 bags of chips; 15 bags of pretzels

b. 15 bags of chips; 8 bags of pretzels *(circled)*

c. 11 bags of chips; 12 bags of pretzels

d. 12 bags of chips; 11 bags of pretzels

chips pretz
$x + y = 23$
$-.25 [x + y = 23]$
$.25x + .5y = 7.75$
$-.25x + .25y = -5.75$
$.25y = 2.00$
$y = 8$

9. Which is true about the equations of a linear system if the system has no solution?

a. Their slopes are the same, but their y-intercepts are different. *(circled)*

b. Their slopes are different, but their y-intercepts are the same.

c. Their slopes are different, and their y-intercepts are different.

d. Their slopes are the same, and their y-intercepts are the same.

parallel lines

✗ This would be the same line twice, which is infinite solutions.

✗ The same line twice, which is infinite solutions.

10. How many solutions does the system $y = 2x + 1$; $-4x + 2y = 2$ have?

a. None

b. Exactly One

c. Exactly Two

d. Infinitely Many *(circled)*

when simplified, it's the same line.

$2y = 4x + 2$
$y = 2x + 1$

11. Solve $2x - 3y = -14$; $3x + 3y = 9$

a. (1, 2)

b. (-1, 4) *(circled)*

c. (1, -4)

d. (-1, 2)

$5x = -5$
$x = -1$

$2(-1) - 3y = -14$
$-2 - 3y = -14$
$+2 \quad +2$
$-3y = -12$
$y = 4$

(x, y) $x = -1$, $y = 4 \to (-1, 4)$

12. The solution of which linear inequality is graphed below?

a. $y < -x$

b. $y > -x$

c. $y \le -x$ *(circled)*

d. $y \ge -x$
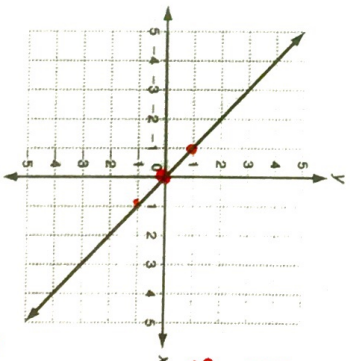
$b = 0$
slope $= -1$
so $y = -x$

line is solid
Shading is below, so
$y \le -x$

13. Which system is represented by the graph below?
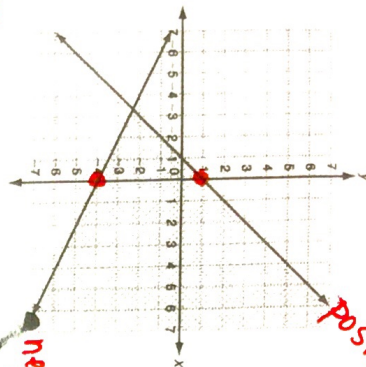
positive slope — *less than* — *Shading is below*

b=1 and

b=-4

greater than → (Shading is above)

negative slope

$y \le x+1$
$y \ge -\frac{1}{2}x+1$

$y \ge x+1$

$-2y \le -x-8$
$y \ge \frac{1}{2}x(+4)$ — *needs to be negative*

$-y \le -x+1$
$\boxed{y \ge x-1}$

a. $-x + y \le 1$
   $x + 2y \ge -8$

b. $x + y \ge 1$
   $x + 2y \le -8$

c. $x - y \ge 1$
   $x - 2y \ge -8$

$x - y \le 1$
$x - 2y \le -8$

14. Which of the following has the same solution as $\begin{array}{l} x+y=-1 \\ x-y=-7 \end{array}$ — $-\frac{1}{7}$?

a. $x + y = -4$
   $x - y = 6$

b. $x - y = 1$
   $x + y = 7$

c. $2x + 2y = -2$
   $3x - 3y = -21$

d. $2x - 2y = 2$
   $3x + 3y = 7$

$2x = -8$ $\boxed{x = -4}$

$2(-4) + 2(3) = -2$
$-8 + 6 = -2$ $-4 + y = -1$
$y = 3$
$3(-4) + 3(3) = -21$
$-12 + 9 = -21$ ✓
$-21 = -21$ ✓

15. Which method would be best to solve the following system and why?

$$y = 2x - 5$$
$$6x - 5y = 3$$

a. Elimination because both equations are in standard form
b. Substitution because the first equation is already solved for y
c. Graphing because this system has fractional answers
d. Graphing because the first equation is already solved for y

16. Beach Hotel in Cancun is offering two weekend specials. One includes a 2-night stay with 3 meals and cost $195. The other includes a 3-night stay with 5 meals and cost $300. Which of the following shows the correct system to model this scenario?

a. $2x + 3y = 300$
   $3x + 5y = 195$

b. $2x + 3y = 195$
   $3x + 5y = 300$

c. $2x + 5y = 300$
   $3x + 5y = 195$

d. $2x + 5y = 195$
   $3x + 5y = 300$

17. Kristin spent $131 on shirts. Fancy shirts cost $28 and plain shirts cost $15. If she bought a total of 7 then how many of each kind did she buy?

a. 2 fancy shirts, and 5 plain shirts
b. 5 fancy shirts, and 2 plain shirts
c. 3 fancy shirts, and 4 plain shirts
d. 4 fancy shirts, and 3 plain shirts

x=fancy   y=plain

$-15[x+y=7]$

$28x + 15y = 131$
$-15x - 15y = -105$
$13x = 26$
$x = 2$ fancy

$2 + y = 7$
$\boxed{y = 5}$ plain

18. What is the value of the x in the solution to the system of linear equations below?

$$y = 8x - 8$$
$$3x + 2y = -16$$

A $x = 0$

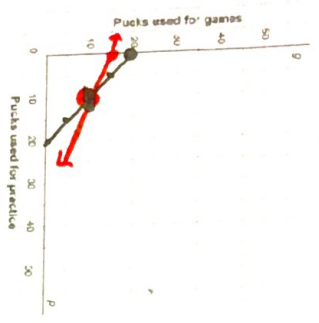B $x = 2$

C $x = -5$

D $x = -8$

$$3x + 2(8x-8) = -16$$
$$3x + 16x - 16 = -16$$
$$19x = 0$$
$$\boxed{x = 0}$$

19.

a) Write a linear system to model this situation:
A hockey coach bought 20 pucks for a total cost of $47.5. The pucks used for games cost $2.00 each, and the pucks used for games cost $2.75 each.

b) Use a graph to solve this problem.
How many of each type of puck did the coach purchase?

Pucks used for games

$$-2 \left[x+y = 20 \right]$$
$$2x + 2.75y = 47.5$$
$$-2x - 2y = -40$$
$$\overline{}$$
$$.75y = 7.5$$
$$y = 10$$

$$x + 10 = 20$$
$$x = 10$$

$$y = -x + 20$$

$$2.75y = -2x + 47.5$$
$$\frac{2.75y}{2.75} = \frac{-2x}{2.75} + \frac{47.5}{2.75}$$
$$= .73x + 17.27$$

Pucks used for practice

20. Write a system of inequalities for the graph.

positive slope
b = -2
less than

negative slope
b = -2
less than

b = -6
less than

a) $y \leq -3x - 6$ $y \geq 2x + 3x$ $y \geq 2x - 6x$

b) $y \leq x + 3x$ $y \leq 2x - 6x$

c) $y \leq x - 2$ $y \leq -3x - 6$

d) $y \geq x + 3x$ $y \leq 2x - 6x$