

- 10 Part I: Multiple Choice. Write the correct answer in the space provided at the end of this section.

1. Which system of equations has the point $(-3, 5)$ as its solution?

(A) $x + 3y = -18$
 $2x + y = -1$

(B) $x - 3y = -18$
 $2x - y = -1$

(C) $x - 3y = -18$ ✓
 $2x + y = -1$ ✓

(D) $x + 3y = -18$
 $-2x + y = -1$

$\times y$

(C) $x - 3y = -18$ $2x + y = -1$
 $(-3) - 3(5) = -18$ $2(-3) + 5 = -1$
 $-3 - 15 = -18$ $-6 + 5 = -1$
 $-18 = -18$ ✓ $-1 = -1$ ✓

2. Which of the following would be a good first step in the solving the following system of

(1) $x + 3y = -18$

(2) $2x + y = -1$

- (A) Multiply (1) by 2 and subtract.
 (B) Multiply (1) by 2 and add.
 (C) Multiply (2) by 3 and add.
 (D) Multiply (2) by 2 and subtract.

3. What is the Lowest Common Denominator (LCD) for the following equation?

$\frac{1}{2}x + \frac{2}{3}y = -10$ LCM $2 \cdot 3 = 6$

- (A) 2
 (B) 3
 (C) 6
 (D) 12
4. How many equations are needed to solve a system with two variables?
 (A) 1
 (B) 2
 (C) 3
 (D) 4

5. Bernard went to his local computer store and purchased 3 packs of paper and 2 ink cartridges for \$59.75. Patrick went to the same store and bought 4 packs of paper and 6 ink cartridges for \$129.50. If p represents the cost of a pack of paper and c represents the cost of an ink cartridge, which system of equations models this situation?

(A) $2p + 3c = 59.75$
 $6p + 4c = 129.50$

$$3p + 2c = 59.75$$
$$4p + 6c = 129.50$$

(B) $3p + 2c = 59.75$
 $4p + 6c = 129.50$

(C) $3c + 2c = 59.75$
 $4p + 4p = 129.50$

(D) $3p + 2p = 59.75$
 $4c + 4c = 129.50$

6. Which system is equivalent to the system of equations given below?

$$3x + 5y = -11$$
$$x - y = -1$$

~~(A)~~ $-6x - 10y = -11$
 $-2x + 2y = -1$

(B) $-6x - 10y = 22$
 $-2x + 2y = 2$

(C) $-3x - 5y = -11$
 $-x + y = -1$

(D) $3x - 5y = 11$
 $x + y = 1$

~~7.~~ Which of the following systems has an infinite number of solution?

(A) $2x + 8y = 3$
 $-x + 4y = 1.5$

(B) $2x - 8y = 3$
 $x - 4y = -1.5$

(C) $2x + 8y = 3$
 $x - 4y = 1.5$

(D) $2x - 8y = 3$
 $x + 4y = -1.5$

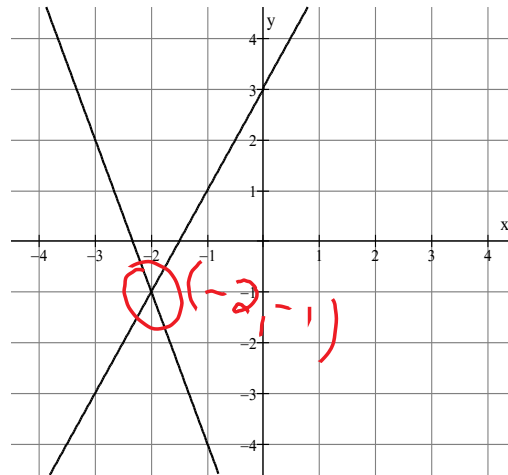
8. What is the solution to the system of equations graphed below?

(A) $(-2, -1)$

(B) $(-2, 1)$

(C) $(-1, -2)$

(D) $(-1, 2)$



9. Which of the following system of equations has $(-1, 1)$ as a solution?

(A) $5x + 6y = 1$
 $6x + 2y = -3$

(B) $3x + 4y = 1$
 $5x - 3y = -8$

(C) $3x - 4y = -6$
 $3x + 3y = 1$

(D) $7x - 3y = 10$
 $6x + 5y = -1$

10. A system of equations is given below:

Equation 1: $\frac{2}{3}x + y = 2$

Equation 2: $x - \frac{4}{5}y = 1$

If Equation 1 is multiplied by three and Equation 2 is multiplied by five, what is the sum of the two new equations?

(A) $3x - 4y = 3$

(B) $6x + 2y = 11$

(C) $7x - y = 3$

(D) $7x - y = 11$

$3 \cdot \frac{2}{3}x + 3y = 3 \cdot 2$
 $2x + 3y = 6$

$5 \cdot x - 5 \cdot \frac{4}{5}y = 5 \cdot 1$
 $5x - 4y = 5$

$7x - y = 11$

Answers to multiple choice.

1. ___

2. ___

3. ___

4. ___

5. ___

6. ___

7. ___

8. ___

9. ___

10. ___

Constructed Response. Answer each question in the space provided. Show all workings.

3 11. Solve by graphing and use substitution or elimination to verify the answer.

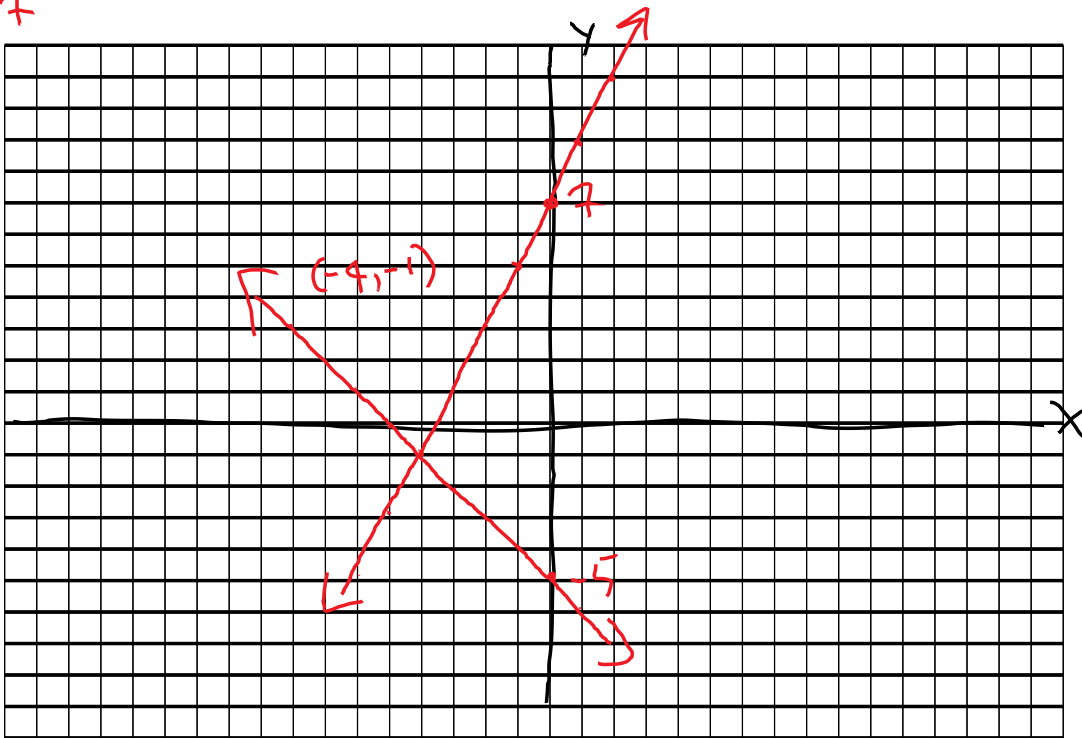
$$\begin{aligned} \textcircled{1} \quad 2x - y &= -7 \\ 2x + 7 &= y \\ y &= 2x + 7 \end{aligned}$$

$$\begin{aligned} m &= 2 \\ b &= 7 \end{aligned}$$

$$\begin{aligned} \textcircled{1} \quad 2x - y &= -7 \\ \textcircled{2} \quad x + y &= -5 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad x + y &= -5 \\ y &= -x - 5 \end{aligned}$$

$$\begin{aligned} m &= -1 \\ b &= -5 \end{aligned}$$



$$\begin{array}{r} \textcircled{1} \quad 2x - \cancel{y} = -7 \\ + \quad \textcircled{2} \quad x + \cancel{y} = -5 \\ \hline 3x = -12 \\ \frac{3x}{3} = \frac{-12}{3} \\ x = -4 \end{array}$$

$$\begin{array}{l} \text{Sub } x \text{ into } \textcircled{2} \\ -4 + y = -5 \\ y = -5 + 4 \\ y = -1 \\ (-4, -1) \end{array}$$

3 12. Solve using substitution:

Solve (2) for x:

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

$$\frac{-2x}{-2} = \frac{3y}{-2} - \frac{8}{-2}$$

$$x = -1.5y + 4$$

Sub into (1)

$$(1) \quad 5x + 8y = 21$$

$$(2) \quad -2x - 3y = -8$$

$$5(-1.5y + 4) + 8y = 21$$

$$-7.5y + 20 + 8y = 21$$

$$0.5y = 21 - 20$$

$$0.5y = 1$$

$$\frac{0.5y}{0.5} = \frac{1}{0.5}$$

$$y = 2$$

Sub y into (2)

$$x = -1.5(2) + 4$$

$$x = -3 + 4$$

$$x = 1$$

$$(1, 2)$$

3 13. Solve using elimination:

$$(1) - 2(2)$$

$$(1) \quad 2x + 3y = 6$$

$$- 2(2) \quad 2x + 4y = 10$$

$$\hline -y = -4$$

$$y = 4$$

$$(1) \quad 2x + 3y = 6$$

$$(2) \quad x + 2y = 5$$

Sub y into (2): $(-3, 4)$

$$x + 2(4) = 5$$

$$x + 8 = 5$$

$$x = 5 - 8$$

$$x = -3$$

3 14. Solve using elimination or substitution:

$$\cancel{3} \cdot \frac{4}{\cancel{3}}x + \cancel{3} \cdot \frac{2}{\cancel{3}}y = \cancel{3} \cdot \frac{8}{\cancel{3}}$$

$$\textcircled{1} 4x + 2y = 8$$

$$2(-x) + 2 \cdot \frac{3}{2}y = 2 \cdot 10$$

$$\textcircled{2} -2x + 3y = 20$$

$$(-1, 6)$$

$$\frac{4}{3}x + \frac{2}{3}y = \frac{8}{3}$$

$$-x + \frac{3}{2}y = 10$$

$$\textcircled{1} 4x + 2y = 8$$

$$\textcircled{2} -2x + 3y = 20$$

$$\textcircled{1} + 2\textcircled{2}$$

$$4x + 2y = 8$$

$$+ \quad -4x + 6y = 40$$

$$\hline 8y = 48$$

$$\frac{8y}{8} = \frac{48}{8}$$

$$y = 6$$

Sub y into $\textcircled{2}$:

$$-2x + 3(6) = 20$$

$$-2x + 18 = 20$$

$$-2x = 20 - 18$$

$$-2x = 2$$

$$\frac{-2x}{-2} = \frac{2}{-2}$$

$$x = -1$$

4 15. Lorraine buys 6 cheap golf balls and 4 expensive ones for \$12.50. Bob buys 4 cheap and 3 expensive balls for \$9.00. Create a system of equations to represent this information and find the price of the two kinds of golf balls using substitution or elimination.

$$\textcircled{1} 6c + 4e = 12.5$$

$$\textcircled{2} 4c + 3e = 9$$

$$3\textcircled{1} - 4\textcircled{2}$$

Cheap balls: \$0.75

Expensive balls: \$2.00

$$18c + \cancel{12e} = 37.5$$

$$-16c + \cancel{12e} = 36$$

$$\hline 2c = 1.50$$

$$\frac{2c}{2} = \frac{1.50}{2}$$

$$c = 0.75$$

Sub c into $\textcircled{2}$:

$$4(0.75) + 3e = 9$$

$$3 + 3e = 9$$

$$3e = 9 - 3$$

$$3e = 6$$

$$\frac{3e}{3} = \frac{6}{3}$$

$$e = 2$$