

Unit 6 Practice Test (or “Show Your Work Test”)

On Solving Systems of Linear Equations And their Word Problems

Unit 6 Practice Test

Name: _____
Date: _____ Period: _____

Systems of Equations:

1. Which ordered pair is a solution of the system?

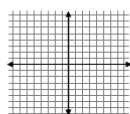
$$\begin{cases} 7y - 4x = 29 \\ x = y - 5 \end{cases}$$

- a) (3, -2) b) (-2, 3)
c) (2, 3) d) (-2, -7)

Solving Systems of Equations by Graphing:

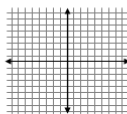
$$2. \begin{cases} x = 3x - 7 \\ y = -x + 1 \end{cases}$$

Solution: _____



$$3. \begin{cases} 4x + 3y = 12 \\ 3x + 6y = -6 \end{cases}$$

Solution: _____



Solving Systems of Equations using the Substitution method.

$$4. \begin{cases} x = 4x - 2 \\ y = 2x + 4 \end{cases}$$

$$5. \begin{cases} y = -5x + 1 \\ 8x + 2y = -2 \end{cases}$$

$$6. \begin{cases} 2y + x = 8 \\ 5x - 2y = 4 \end{cases}$$

Solving Systems of Equations using the Elimination method.

$$7. \begin{cases} -x + y = 10 \\ 2x - y = -14 \end{cases}$$

$$8. \begin{cases} 3x - 4y = 19 \\ 7x + 2y = -1 \end{cases}$$

$$9. \begin{cases} 3x - 5y = 7 \\ 5x - 2y = -1 \end{cases}$$

Applications for Systems of Equations.

10. Plane A is flying at an altitude of 5000 feet. It starts descending (going down) at a rate of 100 feet per minute. Plane B is flying at an altitude of 4100 feet. It starts ascending (going up) at a rate of 50 feet per minute. If the planes start changing altitude at the same time, how many minutes until they are flying at the same altitude?

Let $x =$ _____
Let $y =$ _____

Plane A equation: _____
Plane B equation: _____

Sentence: _____

11. A mom gives her small child either dimes or quarters for helping with odd jobs around the house. At the end of the day, the child has 9 coins with a total value of \$1.20. How many were dimes and how many were quarters?

Let _____ = _____
Let _____ = _____

equation: _____
Value equation: _____

Sentence: _____

12. Jeff and Kim went out for lunch. Jeff bought 4 hamburgers and 3 orders of fries for \$10.40. Kim bought 2 hamburgers and 1 order of fries for \$4.80. Write a system of equations to represent their orders and find the price of a hamburger and the price of fries.

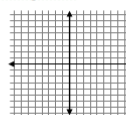
Let _____ = _____
Let _____ = _____

Equation for Jeff: _____
Equation for Kim: _____

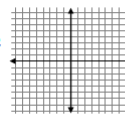
Sentence: _____

Graphing Systems of Inequalities.

$$13. \begin{cases} y > 2x - 5 \\ 3x + 4y < 12 \end{cases}$$



$$14. \begin{cases} y \leq 4 \\ y > -x - 2 \end{cases}$$



Unit 6 Practice Test

Name: _____

Date: _____ Period: _____

Systems of Equations:

1. Which ordered pair is a solution of the system?

$$\begin{cases} 7y - 4x = 29 \\ x = y - 5 \end{cases}$$

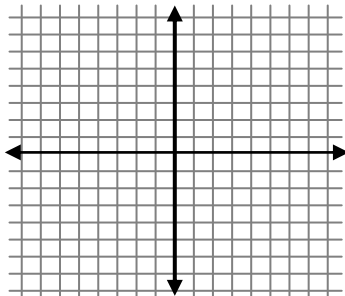
a) (3, -2) b) (-2, 3)

c) (2, 3) d) (-2, -7)

Solving Systems of Equations by Graphing:

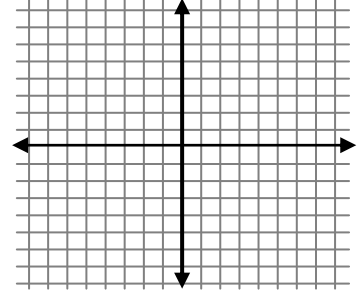
$$\begin{cases} y = 3x - 7 \\ y = -x + 1 \end{cases}$$

Solution:



$$\begin{cases} 4x + 3y = 12 \\ 3x + 6y = -6 \end{cases}$$

Solution:



Solving Systems of Equations using the Substitution method.

$$\begin{cases} y = 4x - 2 \\ y = 2x + 4 \end{cases}$$

$$\begin{cases} y = -5x + 1 \\ 8x + 2y = -2 \end{cases}$$

$$\begin{cases} 2y + x = 8 \\ 5x - 2y = 4 \end{cases}$$

Solving Systems of Equations using the Elimination/Addition method.

$$\begin{cases} -x + y = 10 \\ 2x - y = -14 \end{cases}$$

$$\begin{cases} 3x - 4y = 19 \\ 7x + 2y = -1 \end{cases}$$

$$\begin{cases} 3x - 5y = 7 \\ 5x - 2y = -1 \end{cases}$$

Applications for Systems of Equations.

10. Plane A is flying at an altitude of 5000 feet. It starts descending (going down) at a rate of 100 feet per minute. Plane B is flying at an altitude of 4100 feet. It starts ascending (going up) at a rate of 50 feet per minute. If the planes start changing altitude at the same time, how many minutes until they are flying at the same altitude?

Let $x =$ _____

Let $y =$ _____

Plane A equation: _____

Plane B equation: _____

Sentence: _____

11. A mom gives her small child either dimes or quarters for helping with odd jobs around the house. At the end of the day, the child has 9 coins with a total value of \$1.20. How many were dimes and how many were quarters?

Let ____ = _____

Let ____ = _____

equation: _____

Value equation: _____

Sentence: _____

12. Jeff and Kim went out for lunch. Jeff bought 4 hamburgers and 3 orders of fries for \$10.40. Kim bought 2 hamburgers and 1 order of fries for \$4.80. Write a system of equations to represent their orders and find the price of a hamburger and the price of fries.

Let ____ = _____

Let ____ = _____

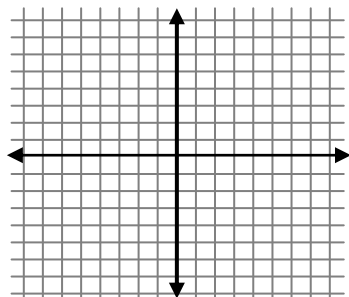
Equation for Jeff: _____

Equation for Kim: _____

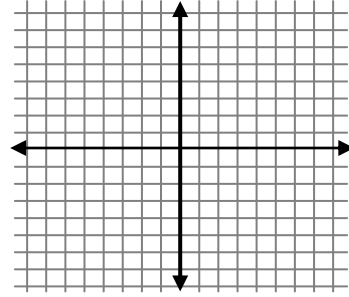
Sentence: _____

Graphing Systems of Inequalities.

13.
$$\begin{cases} y > 2x - 5 \\ 3x + 4y < 12 \end{cases}$$



14.
$$\begin{cases} y \leq 4 \\ y > -x - 2 \end{cases}$$



Unit 6 Practice Test

Name: _____

Date: _____

Period: _____

Key

Systems of Equations:

1. Which ordered pair is a solution of the system?

$$\begin{cases} 7y - 4x = 29 \\ x = y - 5 \end{cases} \rightarrow 7y - 4(y - 5) = 29$$

$$7y - 4y + 20 = 29$$

$$3y = 9$$

$$y = 3$$

$$x = 3 - 5$$

$$x = -2$$

a) (3, -2)

b) (-2, 3)

c) (2, 3)

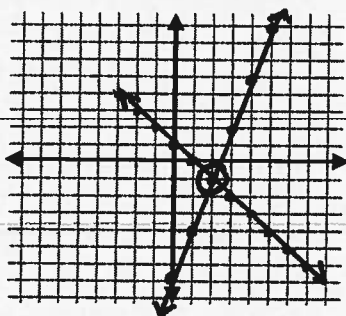
d) (-2, -7)

Solving Systems of Equations by Graphing:

$$\begin{cases} y = 3x - 7 \\ y = -x + 1 \end{cases}$$

Solution:

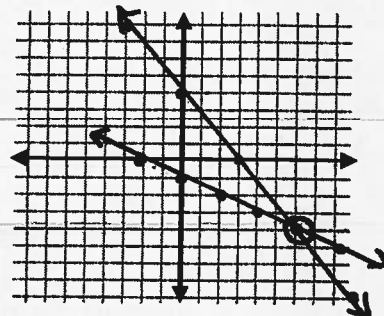
(2, -1)



$$\begin{cases} 4x + 3y = 12 \\ 3x + 6y = -6 \end{cases}$$

Solution:

(6, -4)



* use cover-up short cut!

Solving Systems of Equations using the Substitution method.

$$\begin{cases} y = 4x - 2 \\ y = 2x + 4 \end{cases}$$

$$4x - 2 = 2x + 4$$

$$-2x = 6$$

$$x = -3$$

$$y = 4(-3) - 2$$

$$y = -12 - 2$$

$$y = -14$$

(-3, -14)

$$\begin{cases} y = -5x + 1 \\ 8x + 2y = -2 \end{cases}$$

$$8x + 2(-5x + 1) = -2$$

$$8x - 10x + 2 = -2$$

$$-2x = -4$$

$$x = 2$$

$$y = -5(2) + 1$$

$$y = -10 + 1$$

$$y = -9$$

(2, -9)

$$\begin{cases} 2x + y = 8 \\ 5x - 2y = 4 \end{cases} \rightarrow x = -2y + 8$$

$$5(-2y + 8) - 2y = 4$$

$$-10y + 40 - 2y = 4$$

$$-12y = -36$$

$$y = 3$$

(2, 3)

(2, 3)

Solving Systems of Equations using the Elimination method.

$$\begin{cases} -x + y = 10 \\ 2x - y = -14 \end{cases}$$

$$x = -4$$

$$2(-4) - y = -14$$

$$-8 - y = -14$$

$$-y = -6$$

$$y = 6$$

(-4, 6)

$$\begin{cases} 3x - 4y = 19 \\ 7x + 2y = -1 \end{cases}$$

$$2(7x + 2y = -1)$$

$$3x - 4y = 19$$

$$14x + 4y = -2$$

$$17x = 17$$

$$x = 1$$

$$3(1) - 4y = 19$$

$$3 - 4y = 19$$

$$-4y = 16$$

$$y = -4$$

(1, -4)

$$\begin{cases} 3x - 5y = 7 \\ 5x - 2y = -1 \end{cases}$$

$$-5(5x - 2y = -1)$$

$$6x - 10y = 14$$

$$-25x + 10y = 5$$

$$-19x = 19$$

$$x = -1$$

$$3(-1) - 5y = 7$$

$$-3 - 5y = 7$$

$$-5y = 10$$

$$y = -2$$

(-1, -2)

Applications for Systems of Equations.

10. Plane A is flying at an altitude of 5000 feet. It starts descending (going down) at a rate of 100 feet per minute. Plane B is flying at an altitude of 4100 feet. It starts ascending (going up) at a rate of 50 feet per minute. If the planes start changing altitude at the same time, how many minutes until they are flying at the same altitude?

Let $x =$ minutes

Let $y =$ altitude

Plane A equation: $y = -100x + 5000$

Plane B equation: $y = 50x + 4100$

$$\begin{array}{r} -100x + 5000 + 50x + 4100 \\ -50x \quad \quad \quad -5000 \\ \hline -150x \quad \quad \quad -900 \\ -150 \quad \quad \quad -150 \\ \hline x = 6 \end{array}$$

$$y = -100(6) + 5000$$

$$-600 + 5000$$

$$y = 4400$$

Sentence:

In 6 minutes both planes will be at an altitude of 4400 ft.

11. A mom gives her small child either dimes or quarters for helping with odd jobs around the house. At the end of the day, the child has 9 coins with a total value of \$1.20. How many were dimes and how many were quarters?

Let $d =$ dimes

Let $q =$ quarters

equation: $d + q = 9$

Value equation: $.10d + .25q = 1.20$

$$\begin{array}{r} -10(d + q = 9) \rightarrow -10d - 10q = -90 \\ 100(.10d + .25q = 1.20) \rightarrow 10d + 25q = 120 \\ \hline \quad \quad \quad 15q = 30 \\ \quad \quad \quad q = 2 \\ d + 2 = 9 \\ d = 7 \end{array}$$

Sentence:

The mom gave her child 7 dimes and 2 quarters.

12. Jeff and Kim went out for lunch. Jeff bought 4 hamburgers and 3 orders of fries for \$10.40. Kim bought 2 hamburgers and 1 order of fries for \$4.80. Write a system of equations to represent their orders and find the price of a hamburger and the price of fries.

Let $h =$ hamburgers

Let $f =$ orders of fries

Equation for Jeff: $4h + 3f = 10.40$

Equation for Kim: $2h + f = 4.80$

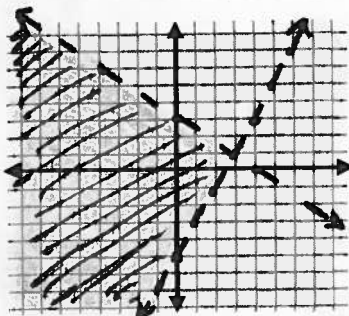
$$\begin{array}{r} 4h + 3f = 10.40 \rightarrow 4h + 3f = 10.40 \\ -3(2h + f = 4.80) \rightarrow -6h - 3f = -14.40 \\ \hline -2h \quad \quad \quad = -4.00 \\ \quad \quad \quad -2 \quad \quad \quad -2 \\ \hline 2(2.00) + f = 4.80 \\ 4.00 + f = 4.80 \\ \quad \quad \quad \rightarrow -4.00 \quad \quad \quad f = .80 \\ h = 2.00 \end{array}$$

Sentence:

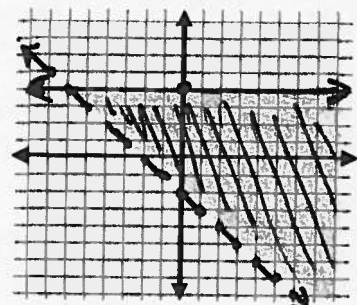
A hamburger costs \$2.00 and fries cost 80 cents.

Graphing Systems of Inequalities.

13.
$$\begin{cases} y > 2x - 5 \\ 3x + 4y < 12 \end{cases}$$



14.
$$\begin{cases} y \leq 4 \\ y > -x - 2 \end{cases}$$



Unit 6 Practice Test

Name: Kevin Period:

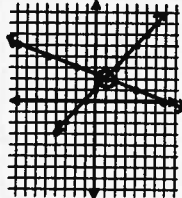
Solving Systems of Equations

1. Which ordered pair is a solution of the system?

$$\begin{cases} 7y - 4x = 29 \\ 7y - 4y + 20 = 29 \end{cases}$$

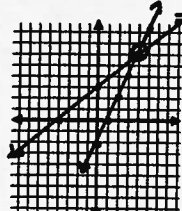
$$\begin{cases} 7y - 4x = 29 \\ 7y - 4y + 20 = 29 \end{cases} \rightarrow \begin{cases} x = -5 \\ y = 9 \end{cases}$$

Solving Systems of Equations by Graphing



$$\begin{cases} y = 3x - 7 \\ y = -x + 1 \end{cases}$$

Solution: $(2, -1)$



$$\begin{cases} 4x + 3y = 12 \\ 3x + 6y = -6 \end{cases}$$

Solution: $(6, -4)$

* Use Cover-up Short cut!

Solving Systems of Equations using the Substitution method

$$\begin{cases} y = 4x - 2 \\ y = 2x + 4 \end{cases} \rightarrow \begin{cases} 4x - 2 = 2x + 4 \\ -2x = 6 \\ x = -3 \end{cases} \rightarrow \begin{cases} y = 4(-3) - 2 = -14 \\ y = 2(-3) + 4 = -2 \end{cases}$$

Solving Systems of Equations using the Elimination method

$$\begin{cases} -x + y = 10 \\ 2x - y = -14 \end{cases} \rightarrow \begin{cases} -x + y = 10 \\ -x + y = -14 \end{cases} \rightarrow \begin{cases} x = -4 \\ y = 6 \end{cases}$$

$$\begin{cases} 2x + x = 8 - 2y \\ 3x - 2y = 4 \end{cases} \rightarrow \begin{cases} 3x - 2y = 4 \\ 3x - 2y = 4 \end{cases} \rightarrow \begin{cases} x = -2y + 8 \\ x = -2y + 8 \end{cases} \rightarrow \begin{cases} x = -2y + 8 \\ x = -2y + 8 \end{cases}$$

$$\begin{cases} 3x - 5y = 7 \\ 6x - 10y = 14 \end{cases} \rightarrow \begin{cases} 3x - 5y = 7 \\ 6x - 10y = 14 \end{cases} \rightarrow \begin{cases} 3x - 5y = 7 \\ 6x - 10y = 14 \end{cases} \rightarrow \begin{cases} x = -1 \\ y = -2 \end{cases}$$

Applications for Systems of Equations

10. Plane A is flying at an altitude of 5000 feet. It starts descending (going down) at a rate of 100 feet per minute. Plane B is flying at an altitude of 4100 feet. It starts ascending (going up) at a rate of 50 feet per minute. If the planes start changing altitude at the same time, how many minutes until they are flying at the same altitude?

$$\begin{cases} \text{Let } x = \text{minutes} \\ \text{Let } y = \text{altitude} \end{cases}$$

$$\begin{aligned} -100x + 5000 &= 50x + 4100 \\ -150x &= -900 \\ x &= 6 \end{aligned}$$

$$y = -100(6) + 5000 = 4400$$

Science

In 6 minutes both planes will be at an altitude of 4400 ft.

11. A mom gives her small child either dimes or quarters for helping with odd jobs around the house. At the end of the day, the child has 9 coins with a total value of \$1.20. How many dimes and how many quarters?

$$\begin{cases} \text{Let } d = \text{dimes} \\ \text{Let } q = \text{quarters} \end{cases}$$

$$\begin{aligned} -10(d + q = 9) &\rightarrow -10d - 10q = -90 \\ 100(d + 25q = 1.20) &\rightarrow 10d + 25q = 120 \\ 15q &= 30 \\ q &= 2 \\ d + 2 &= 9 \\ d &= 7 \end{aligned}$$

Science

The mom gave her child 7 dimes and 2 quarters.

12. Jeff and Kim went out for lunch. Jeff bought 4 hamburgers and 3 orders of fries for \$10.40. Kim bought 2 hamburgers and 1 order of fries for \$4.80. Write a system of equations to represent their orders and find the price of a hamburger and the price of fries.

$$\begin{cases} \text{Let } h = \text{hamburgers} \\ \text{Let } f = \text{orders of fries} \end{cases}$$

$$\begin{aligned} 4h + 3f &= 10.40 \\ 2h + f &= 4.80 \end{aligned}$$

$$\begin{aligned} 4h + 3f &= 10.40 \\ -2h - f &= -4.80 \\ 6f &= 14.40 \\ f &= 2.40 \\ 2h + 2.40 &= 4.80 \\ 2h &= 2.40 \\ h &= 1.20 \end{aligned}$$

Science

A hamburger costs \$2.00 and fries cost 80 cents.

Graphing Systems of Inequalities



$$\begin{cases} y > 2x - 5 \\ 3x + 4y < 12 \end{cases}$$



$$\begin{cases} y <= 4 \\ y >= x - 2 \end{cases}$$