AChor/MFM2P

Name: _____
Date: _____

Practice Test 6: Linear Systems

K: _____	C: _____	A: _____	T: _____

Knowledge:

1. Solve the following system of linear equations **graphically**: $\begin{array}{l} -2x + y = -3 \\ y = 3x - 2 \end{array}$. [K: 8]
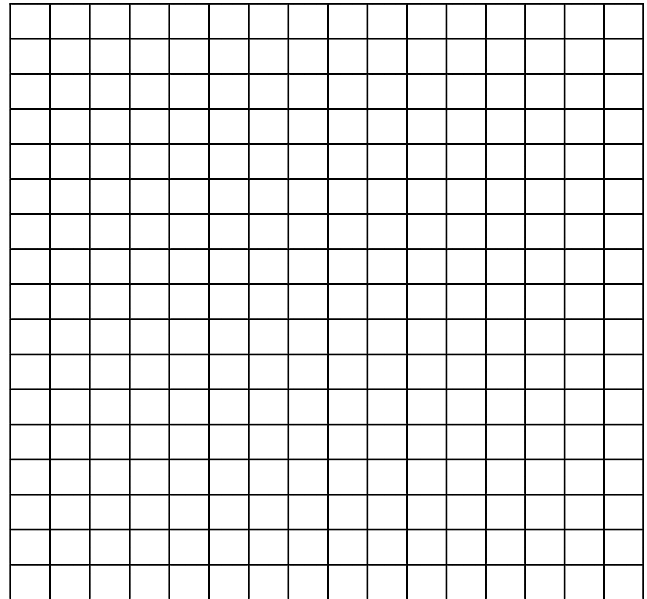
**The solution is:

2. Is $(-1, -1)$ the solution to the linear system: $\begin{array}{l} -x + 2y = -1 \\ 2x + y = 2 \end{array}$? [K: 5]

Answers: 1. The solution is $(-1, -5)$ **; 2.** Use **L.S.=R.S. Check**, $(-1, -1)$ is not the solution.

3. Solve the following system of linear equations **by substitution**: $\begin{aligned} -5x + y &= -2 \\ 6x + 3y &= 36 \end{aligned}$. [K: 8]

**The solution is:

4. Solve the following system of linear equations **by elimination**: $\begin{aligned} 3x - 2y &= 2 \\ -10x + 3y &= 8 \end{aligned}$. [K: 8]

**The solution is:

Answers: 3. The solution is $(2, 8)$ **; 4.** The solution is $(-2, -4)$.

Communication:
Write your answers in FULL English sentences.   [C: 1]

5.   For the system of linear equations: $\begin{array}{l} x + 3y = -1 \\ 3x - 2y = 8 \end{array}$,

(a) **describe in words** the steps you follow to solve the system by graphing.   [C: 4]

(b) **describe in words** the steps you follow to solve the system by substitution.   [C: 4]

(c) **describe in words** the steps you follow to solve the system by elimination.   [C: 6]

Application/Thinking:
 Answers: 5. See worksheets 6-3, 6-4 and 6-5. Write out your answers step by step. Each step is worth 1 mark.

Provide answer statements for the following questions.   [C: 1]

6. A computer store manager knows that the fixed costs for the store are $8900 per month and that the unit cost per computer is $850. The store sells a computer for $1295. The cost and revenue can be represented by the following equations:

        Cost: $d = 8900 + 850c$
        Revenue: $d = 1295c$

        where c is the number of computers and d is an amount in dollars.

(a) How many computers does the store need to sell to break even?   [A: 8]

(b) Supposed the fixed costs increase to $9790. Now how many computers does the store need to sell to break even?   [T: 8]

Answers: 6. (a) 20 computers, (b) Replace 8900 by 9790 then solve the equations, 22 computers

7. A high school class is putting together a newsletter. The cost of design and colour copies is $200 plus 75¢ per copy. The class plans to sell the newsletter for $1.25.

(a) How many newsletters must be sold to break even? [A: 8]
   (Hint: Create two linear equations using the information given. Don't forget the let statements.)

(b) How many newsletters must be sold to make a profit? [T: 2]

8. Isabella rode her motorcycle at constant speed. It took her 2 hours to travel 216 km with the wind behind her. The return trip took her 3 hours riding into the wind. Let s represent the speed of the motorcycle and w represent the speed of the wind. Write a linear system to represent this situation. (Hint: Distance = time × speed) [T: 4]

Answers: 7. (a) d represents **cost and revenue** in dollars, n represents the **number of copies** made and sold,
$C: d = 200 + 0.75n$, $R: d = 1.25n$, 400 copies, (b) more than 400 copies when revenue > cost;
8. Distance = time × speed: $2(s + w) = 216$, $3(s - w) = 216$

9. A bank teller has a total of 43 paper bills in fives and tens. The total value of the money is $340. How many $5 bills and how many $10 bills does the bank teller have?   [A: 8]

    (Hint: Create two linear equations using the information given. Don't forget the let statements.)

10. Neil's little brother has a total of 8 cars and trucks to play with. For his birthday, he wants to double the number of cars he has. If he does, he will have a total of 11 cars and truck. Write a linear system to represent this situation.   [T: 4]

11. Andy has a total of $6000 to invest. He puts part of it in an investment yielding an 8% gain per year, and the rest in an investment yielding a 3% loss per year. At the end of one year, Andy made an overall gain of $260. Write a linear system to represent this situation.   [T: 4]

Answers: 9. x = number of $5 bills, y = number of $10 bills, $x + y = 43$, $5x + 10y = 340$, 18 5-dollar bills, 25 10-dollar bills**; 10.** c = number of cars, t = number of trucks, $c + t = 8$, $2c + t = 11$ **;**
11. x = amount invested in 8% gain, y = amount invested in 3% loss, $x = y = 6000$, $0.08x - 0.03y = 260$