MATH 125 College Algebra Name_____

If a system of equations has at least one solution, then it is defined to be a _____.

If a system of equation has no solution, then it is defined to be _____.

If a system of equations has Infinitely Many solutions, then it is defined to be a _____.

If a system of equation does not have Infinitely Many solutions, then it is defined to be _____.

A System of Equations has Infinitely Many Solutions _____ any ordered pair is a solution.

Solving Systems of Two Equations with Two Variables by Substitution Method

A. $\begin{cases} 2x + y = 23 \\ y = x + 11 \end{cases}$

B. $\begin{cases} x = -5y + 1 \\ 3x - 2y = 54 \end{cases}$

C. $\begin{cases} x - 2y = -11 \\ -3x + 6y = 20 \end{cases}$

Solving Systems of Two Equations with Two Variables by Linear Combination (Addition or Elimination) Method

D. $\left\{ \begin{array}{l} -x + 5y = 35 \\ 4x - 3y = -55 \end{array} \right\}$

E. $\left\{ \begin{array}{l} 7x - 4y = 31 \\ 2x - 6y = 21 \end{array} \right\}$

F. $\left\{ \begin{array}{l} 4x + 10y = 6 \\ 6x + 15y = 9 \end{array} \right\}$

Business Functions: $Let \quad x \quad = \quad number\ of\ units\ sold$

Revenue Function : $\Rightarrow \quad R(x) = (\ price\ per\ unit\ sold\ )\ x$

Cost Function: $\Rightarrow \quad C(x) = fixed\ \text{costs} + (\ \text{cost}\ per\ unit\ produced\ )\ x$

Profit Function : $\Rightarrow \quad P(x) = \text{Revenue}\ Function - \text{Cost}\ Function$

$P(x) = R(x) - C(x)$

The number of units sold at the Break Even Point matches the number of units sold when the Profit is Zero.

Example: A company that manufactures running shoes has a fixed cost of $600,000. Additionally, it costs $60 to produce each pair of shoes. They are sold at $160 per pair.

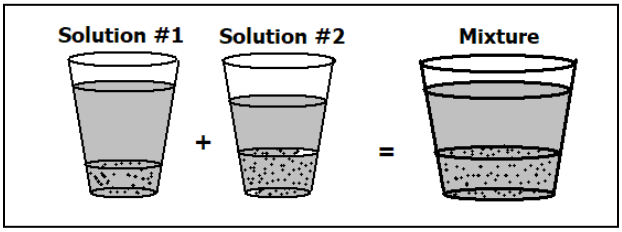
A. Write the cost function, C(x), of producing x pairs of running shoes.

B. Write the revenue function, R(x), from the sales of x pairs of running shoes.

C. Determine the break-even point. Describe what this means.

D. How many pairs of shoes must be sold to have a profit of at least $100,000?

$$\begin{cases} \#1\ Total\ Measurement + \#2\ Total\ Measurement = Mix\ Total\ Measurement \\ \#1\ Part\ Measurement + \#2\ Part\ Measurement = Mix\ Part\ Measurement \end{cases}$$



Example:

A chemist needs to mix a 12% acid solution with a 20% acid solution to obtain 240 ml of a solution that is 15% acid. How many of ml of each solution should be used?

$Let\ x\ =\ The\ number\ of$

$Let\ y\ =$