

Sometimes when we solve systems of equations, we might get _____ or _____

Ex 5) Solve the following system by substitution:

$$\begin{cases} x = x + 3 \\ 2y = 2x + 6 \end{cases}$$

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

$$\begin{array}{r} 2x+6 = 2x+6 \\ -2x-6 \quad -2x-6 \\ \hline 0 = 0 \end{array}$$

infinite solutions

Ex 7) Solve the following system by substitution:

$$\begin{cases} y = \frac{1}{2}x + 5 \\ 2x - 4y = 11 \end{cases}$$

$$\begin{array}{l} 2x - 4(\frac{1}{2}x + 5) = 11 \\ 2x - 2x - 20 = 11 \end{array}$$

no solution

Ex 6) Solve the following system by substitution:

$$\begin{cases} y = 5x + 12 \\ 5x - y = -13 \end{cases}$$

$$5x - (5x + 12) = -13$$

$$\begin{array}{l} 5x - 5x - 12 = -13 \\ -12 = -13 \end{array}$$

Ex 8) Solve the following system by substitution:

$$\begin{cases} 3x - 4y = 1 \\ 15x - 20y = 5 \end{cases} \text{ same line}$$

infinite sol.

Word Problems

Ex 9) The sum of two numbers is 28 and their difference is 6. Determine each of the numbers.

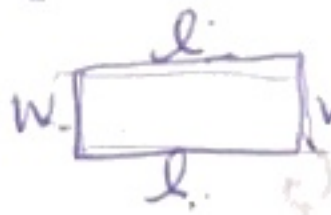
Ex 10) The length of a rectangle is 3 cm more than twice the width. The perimeter of the rectangle is 42 cm. Find the dimensions of the rectangle.

$$* l = 2w + 3$$

$$l = 2(6) + 3$$

$$l = 15$$

15cm x 6cm



$$* P = 2l + 2w$$

$$42 = 2(2w + 3) + 2w$$

$$42 = 4w + 6 + 2w$$

$$42 = 6w + 6$$

$$36 = 6w$$

$$w = 6$$