Name:_____ **TA:**_____

Foundations of Math 10 LG 13 Ver A

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Expectation 1: solve systems of linear equations using the substitution method.

1. Solve this linear system of equations using the method of substitution. (2 marks)

$y = -6x - 100$
$-x + y = 12$

$-x + (-6x - 100) = 12$

$-7x - 100 = 12$

$-7x = 112$

$x = \frac{112}{-7}$

$x = -16$

$y = -6x - 100$

$y = -6(-16) - 100$

$= 96 - 100$

$= -4$

$(-16, -4)$

2. Solve this linear system of equations using the method of substitution. (2 marks)

$2x + y = 14$ → $y = 14 - 2x$
$3x - 2y = 7$

$3x - 2(14 - 2x) = 7$

$3x - 28 + 4x = 7$

$7x = 35$

$x = \frac{35}{7}$

$x = 5$

$y = 14 - 2x$

$y = 14 - 2(5)$

$y = 14 - 10$

$y = 4$

$(5, 4)$

Expectation 2: solve systems of linear equations using the elimination method.

3. Solve this system of equations using the elimination (addition/subtraction) method: (2 marks)

$-5x + y = -19$
$4x + y = 26$

$-9x = -45$

$x = \frac{-45}{-9}$

$x = 5$

$4x + y = 26$

$4(5) + y = 26$

$20 + y = 26$

$y = 26 - 20$

$y = 6$

$(5, 6)$

4. Solve this system of equations using the elimination (addition/subtraction) method. (2 marks)

$2x - 3y = 6$ $\times 3$
$3x + 2y = 8$ $\times 2$

$6x - 9y = 18$
$-\ 6x + 4y = 16$

$-13y = 2$

$y = \frac{-2}{13}$

$2x - 3y = 6$

$2x - 3\left(\frac{-2}{13}\right) = 6$

$2x + \frac{6}{13} = 6$

$2x = 6 - \frac{6}{13}$

$2x = \frac{78}{13} - \frac{6}{13}$

$2x = \frac{72}{13}$

$x = \frac{72}{13} \div \frac{2}{1}$

$x = \frac{72}{13} \times \frac{1}{2}$

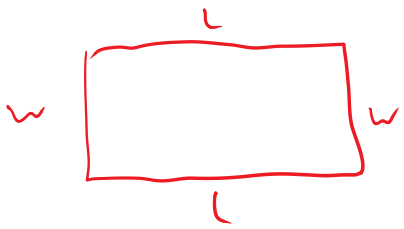
$x = \frac{72}{26}$

$x = \frac{36}{13}$

$\left(\frac{36}{13}, \frac{-2}{13}\right)$

Expectation 3: choose a strategy to solve a problem that involves a linear system.

5. The perimeter of a rectangle is 36 m. The length is 3 m less than twice the width. Create a system of two equations and solve the system using substitution **or** elimination (addition/subtraction). What is the length of the rectangle? (2 marks)



L = LENGTH

w = WIDTH

PERIMETER = 36m

$2L + 2w = 36$

$L = 2w - 3$

$2(2w-3) + 2w = 36$

$4w - 6 + 2w = 36$

$6w - 6 = 36$

$6w = 42$

$w = 7m$

So $L = 2w - 3$

$L = 2(7) - 3$

$L = 14 - 3$

$L = 11m$

LENGTH = 11m & WIDTH = 7m

6. Khoi wants to hire a moving van. One company charges $110.00 for the day plus $0.60/km. Another company charges $132.00 for the day plus $0.40/km. Create a system of two equations and solve the system using substitution **or** elimination (addition/subtraction). For what distance will the charges be the same? (2 marks)

C = COST $\quad$ d = DISTANCE

COMPANY 1: $C = 110 + 0.60d$

COMPANY 2: $C = 132 + 0.40d$ $\quad$ SUBTRACT

$$0 = -22 + 0.20d$$

$$22 = 0.20d$$

$$\frac{22}{0.20} = d$$

$$110 \text{ km} = d$$

AT $d = 110$ km, THE COST WILL BE THE SAME.