Lesson 3-2 – Solving Linear Systems Algebraically L.O: I can solve a Linear System by using the Substitution Method and Elimination Method.

EQ: How is solving a Linear System using Substitution and Elimination different than solving by Graphing? How is it the same?

EX.1 – Solving a Linear System using the Substitution Method

1. Solve the system by using the Substitution Method.

a) $2x - 4y = -2$
$y = -2x + 8$

b) $y = 2x - 3$
$6x - 3y = -15$

c) $3x + 4y = -4$
$x + 2y = 2$

d) $-2x + y = 6$
$4x - 2y = 5$

EX.2 – SOLVING A LINEAR SYSTEM USING ELIMINATION

Solve the system by using the Elimination Method.

a) $3x + 4y = -4$
$x + 2y = 2$

b) $-2x + y = 6$
$4x - 2y = 5$

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c) $y = 2x - 3$

$6x - 3y = -15$

$2x - 4y = -2$

$y = -2x + 8$

EX. 3 – APPLICATION – SOLVING LINEAR SYSTEMS RELATING TO REAL – WORLD SITUATION.

a.) At Renaldi's Pizza, a soda and two slices of the pizza – of – the – day cost $10.25. A soda and four slices of the pizza – of – the – day cost $18.75. Find the cost of each.

b.) You can buy CDs at a local store for $15.49 each. You can buy them at an online store for $13.99 each plus $6 for shipping. Write and solve a system of equations to find the number of CDs that you can buy for the same amount at the two stores.

c.) A bookstore took in $167 on the sale of 5 copies of a new cookbook and 3 copies of a new novel. The next day it took in $89 on the sale of 3 copies of the cookbook and 1 copy of the novel. What was the price of each book?

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d.) A theater production costs $40,000 plus $2800 per performance. A sold-out performance brings in $3675. How many sold-out performances will the production need to break even?

e.) **Geometry:** Two triangles have the same perimeter of 20 units. One triangle is an isosceles triangle. The other triangle has one side 6 units long, its other two sides have lengths the same as the base and leg of the isosceles triangle.

- What are the dimensions of each triangle?
- What type of triangle is the second triangle?

f.) The admission fee at a small fair is $1.50 for children and $4.00 for adults. On a certain day, 2200 people enter the fair and $5050 is collected. How many children and how many adults attended?

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g.) A test has twenty questions worth 100 points. The test consists of True/False questions worth 3 points each and multiple choice questions worth 11 points each. How many multiple choice questions are on the test?

h.) You are running a concession stand at a basketball game. You are selling hotdogs and sodas. Each hotdog costs $1.50 and each soda costs $2.50. At the end of the night, you made a total of $78.50. You sold a total of 87 hot dogs and sodas combined. You must report the number of hotdogs and sodas sold. How many hotdogs and sodas were sold?