Algebra 1 Semester 2 Study Guide

Name _____

Part 1 – This is part of your exam grade.

Systems of Linear Equations – I can write and solve systems of linear equations.

1. Solve each system of equations:

a) $y = 2x - 5$
$y = -4x + 19$

graphing (4, 3)

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

$y = -x + 6$

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

$-4x + 6 = 2$

$-4x = -4$

$x = 1$

$1 + y = 6$

$y = 5$

(1, 5)

$-3(1) + 5 = 2$?

$-3 + 5 = 2$

$2 = 2$ ✓

Substitution

c) $3(2x + 3y = 6)$
$-2(3x + 4y = 5)$

Write and solve a system of linear equations for each problem below.

2. On Mr. Wood's farm, he raises chickens and cows. There are 34 animals in all. Mr. Wood counts 110 legs on these animals. Find the number of each type of animal.

3. A test has 24 questions worth 100 points. The true/false questions are worth 4 points each and the multiple choice questions are worth 5 points each. How many of each type of question are on the test?

4. Emma is throwing a party! She buys 3 rolls of streamers and 15 party hats for $30. Later, she buys 2 more rolls of streamers and 4 more party hats for $11. Find the cost of each roll of streamers and each party hat.

Exponents– I can simplify exponential expressions.

Simplify each expression.

5. $9^{-3} = \frac{1}{729}$

6. $(-2.34)^0 = 1$

7. $\frac{x^7}{x^{14}} = \frac{1}{x^7}$

8. $5m^{-4}n^3 = \frac{5n^3}{m^4}$

9. $\frac{-2x^5y^{-3}}{z^{-2}} = \frac{-2x^5z^2}{y^3}$

10. $(k^2)^4 = k^8$

11. $-3d^{-4} \cdot 5d^9 = -15d^5$

12. $x^{-4} \cdot x^2 \cdot x^{-1} = \frac{1}{x^3}$

13. $(t^{-2})^6 = \frac{1}{t^{12}}$

#1c)

$6x + 9y = 18$

$-6x - 8y = -10$

$y = 8$

$2x + 7(8) = 6$

$2x + 24 = 6$

$2x = -18$

$x = -9$

$3(-9) + 4(8) = 5$?

$-27 + 32 = 5$

$5 = 5$ ✓

Elimination $(-9, 8)$

2. On Mr. Wood's farm, he raises chickens and cows. There are 34 animals in all. Mr. Wood counts 110 legs on these animals. Find the number of each type of animal.

c = chickens

w = cows

$-2(c + w = 34)$

$2c + 4w = 110$

$-2c - 2w = -68$

$2w = 42$

$w = 21$ cows

$c = 34 - 21 = 13$ chickens

13×2 legs $= 26$

21×4 legs $= 84$

110 ✓

3. A test has 24 questions worth 100 points. The true/false questions are worth 4 points each and the multiple choice questions are worth 5 points each. How many of each type of question are on the test?

x = t/f questions

y = M.C. questions

$-4(x + y = 24)$

$4x + 5y = 100$

$-4x - 4y = -96$

$y = 4$ M.C. questions

$x = 24 - 4 = 20$ t/f questions

$20(4) + 4(5) = 100$ ✓

$80 + 20 = 100$

4. Emma is throwing a party! She buys 3 rolls of streamers and 15 party hats for \$30. Later, she buys 2 more rolls of streamers and 4 more party hats for \$11. Find the cost of each roll of streamers and each party hat.

s = cost each # of rolls of streamers

p = cost of each party hat

$-2(3s + 15p = 30)$

$3(2s + 4p = 11)$

$-6s - 30p = -60$

$6s + 12p = 33$

$-18p = -27$

$p = \$1.50$ per hat

#4)

$2(2.50) + 4(1.50) = 11$?

$5 + 6 = 11$ ✓

$3s + 15(1.50) = 30$

$3s + 22.50 = 30$

$3s = 7.5$