Algebra 1 2015 1st Semester Final Study Guide Name: Period:

**1. Fractions**

**How do you add or subtract fractions?**

**How do you multiply fractions?**

**How do you divide fractions?**

**Solve:**

a. = b. = c. =

d. = e. f. =

**2. Explain the steps in the Order of Operations?**

**Evaluate:**

a. 2 [ (9 + 3) ÷ 4] b. 27 ÷ 32  • 2 – 3 c. -20 – 8 [ 20 – ( 9 – 5)2 ]

**Evaluate for the given values:**

d. 11 + r3 – 10r when r=5 e. 4n2 – 3m when n=-3 and m=-5

f. when a=7 g. 5 + x when x=4 h. (6 – 2t) when t=12

 **3. Describe the distributive property.**

**Simplify the following:**

a. 8 ( x – 4 ) – 10x b. ( z – 4) ( -z) c. 14 - 3 ( 2x + 5)

d. e. f.

**4. How do you solve equations?**

**Solve:**

a. b. 6j – 3 + 5j = 30 c. n = 12

d. -12h + 39 = -4h – 17 e.

**5. How do you solve a proportion?**

**Solve:**

a. b. c.

**6. How do you solve percent problems?**

**Solve. Round to the nearest tenth.**

a. What percent of 120 if 25? b. What is 70% of 47?

c. 28 is 16% of what number? d. What percent of 64 is 16?

**7. Solve the following literal equations for the given variable:**

a. F = ma for a b. P = 2L + 2W for L

c. ax + by = c for x d. C = ( F -32) for F

**8. Solve these absolute value equations:**

a. │ m + 3│ = 7 b. 3 │13 -2t│ = 15

c. 3 │2x + 3│- 8 = 19 d. │4x - 9│ + 1 = 8

**9. What are the rules for solving inequalities?**

**Solve and graph:**

a. -2 > 5 + y b. ≤ 8 c. 4p + 7 < 5( 2p -7)

d. -2 ≤ 4 – 3a < 13 e. -6 < 2t – 5 ≤ -3 f. 9s – 6 < 12 or 3s + 1 ≥13

**10. Define domain and range.**

 **How can you tell if a relation is a function?**

For the following relations, identify the domain and range. Determine if it is a function, and explain how you know.

a. b. c.

|  |  |
| --- | --- |
| x | y |
| -1 | 4 |
| 3 | 6 |
| 5 | -4 |
| 13 | 3 |
| 8 | 9 |

|  |  |
| --- | --- |
| X | y |
| 5 | 1 |
| 8 | 9 |
| 6 | 7 |
| 1 | 8 |
| 5 | 6 |

|  |  |
| --- | --- |
| X | y |
| 3 | 6 |
| 4 | 5 |
| 2 | 8 |
| 9 | 8 |
| 1 | 3 |

11. Write the following as an algebraic equation:

a. 6 is 4 less than twice a number n.

b. Three times a number n decreased by 7 is 51

c. The sum of the square of a number n and 10 is 91.

d. The product of a 4 and a number n is more than 58.

**12. Is it a solution?**

a. Is x = 5 a solution to 3x -18 > -9?

b. Is x = -4 a solution to 20 ≥ -5x?

c. Is the point ( -2, 7) a solution to 2x + 3 = y ?

d. Is the point 3, -8 a solution to 4x -9 < 2y ?

**13. Word problems.**

a. **Moving** You helped a friend move a short distance recently. The friend rented a truck for $15 an hour and rented a dolly for $5. Your friend paid a total of $80 for the rental. For how long did your friend rent the truck?

b. **Vacation** You are driving to a vacation spot that is 1500 miles away. Including rest stops, it takes you 42 hours to get to the vacation spot. You estimate that you drove at an average speed of 50 miles per hour. How many hours were you not driving?

c. **Saving and Spending** Currently, you have $80 and your sister has $145. You decide to save $6 of your allowance each week, while your sister decides to spend her whole allowance plus $7 each week. How long will it be before you have as much money as your sister?

d. **Botanical Gardens** The membership fee for joining a gardening association is

$24 per year. A local botanical garden charges members of the gardening association $3 for admission to the garden. Nonmembers of the association are charged $6. After how many visits to the garden is the total cost for members, including the membership fee, the same as the total cost for nonmembers?

e. **Electricians** Two different electrical businesses charge different rates.

Business A charges $30 for a service call, plus an additional $45 per hour for labor. Business B charges $45 for a service call, plus an additional $40 per hour for labor.

1. Let *x* represent the number of hours of labor and let *y* represent the total charge in dollars. Write a linear system that you could use to find the lengths of a service call for which both businesses charge the same amount.
2. Solve the linear system.
3. When will the businesses charge the same amount?

f. **Baseball Game** Two families go to a baseball game. One family purchases two adult tickets and three youth tickets for $33. Another family purchases three adult tickets and two youth tickets for $37. Let *x* represent the cost in dollars of one adult ticket and let y represent the cost in dollars of one youth ticket. The linear system given by 2*x* + 3*y* = 33 and 3*x* + 2*y* = 37 represents this situation.

* + - 1. Solve the linear system to find the cost of one adult and one youth ticket.
			2. How much would it cost two adults and five youths to attend the game?

**14. Solve these systems of equations by substitution:**

*a. x* = 6 –4y

2*x* –3*y* = 1

d. 4*x* +3*y* = 0

2*x* + *y* = –2

*b. –x* + 2*y* = –6

8*x* + *y* = 31

e. 6*x* –y = –35

5*x* –2*y* = –35

c. 2*x* + 3*y* = –9

8*x* –4*y* = 32

f. 3*x* + 3*y* = –18

4*x* –*y* = –14

**15. Solve these systems of equations by elimination:**

*a. x* + 5*y* = –8

–*x* –2*y* = –13

b. 7*x –* 4*y* = –30

3*x* + 4*y* = 10

c. 6*x* + *y* = 39

–2*x* + *y* = –17

d. 8*x* – 4*y* = –76

5*x* + 2*y* = –16

e. –3*x* + 10*y* = 23

5*x* + 2*y* = 55

f. 9*x* – 4*y* = 26

18*x* + 7*y* = 22