Algebra 1 Fall Semester Exam Review

Unit 1 – Expressions   **Unit 1 Grade:** _____

I Can Simplify an Expression (both CLT and Distributive Property).

1. Simplify -8x + 4(7x + 2) – 3(5x – 2)   2. Simplify $\frac{24x-18}{6} + 4(-2x + 5) - 7x$

I Can Evaluate an Expression.

3. Evaluate -5x – 8y + 3x – 4 + 2y when x = -3 and y = 7   4. Evaluate x^2 – 4x + 7 when x = -3

I Can Create an Expression from a Context.

Create an expression for problems 5 and 6.

5. Nathan has $160 to spend on jeans for school. Each pair of jeans costs $40. Write an expression that represents the amount of money remaining after Nathan has purchased *j* pairs of jeans.

6. A carpenter charges a $75 flat fee plus $50 per hour. Write an expression for the total amount spent after *h* hours.

I Can Solve an Equation.

7. Solve $\dfrac{x-4}{3} = -6$

8. Solve $-5(3 + x) + 25 = 15$

9. Solve $5(x + 2) - 3x = -3(x - 5)$

I Can Create and Solve an Equation from a Context.

10. Mrs. Jackson earned a $500 bonus for signing a one year contract to work as a nurse. Her salary is $22 per hour. If her first week's check including the bonus is $1204, how many hours did Mrs. Jackson work? Create an equation and then solve it.

11. The Beach Shack rents boats for $60 for the first three hours and $30 for each additional hour after that. If you spent $180, how many hours did you rent a boat? Create an equation and then solve.

I Can Solve a Literal Equation.

12. Solve the equation for h:

$$S = 2\pi rh$$

13. Solve the equation for a:

$$g = \frac{b+2a}{10}$$

I Can Solve and Graph an Inequality.

14. Solve and graph: 4 > -3x + 10   15. Solve and graph: 7 – 2x ≤ 21

Is x = 5 a solution? Explain why or why not.   Is x = -7 a solution? Explain why or why not.

I Can Create and Solve an Inequality from a Context.

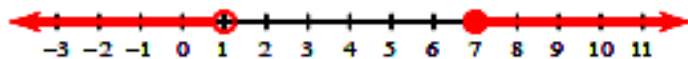16. Create an inequality for the following scenarios:
a. You must be a minimum of 18 years old in order to vote. _____

b. Children under 3 years old get into the park for free. _____

c. In order to qualify for free shipping, you must spend at least $25. _____

d. You essay must be over 300 words. _____

17. Cecilia has $30 dollars to spend at a carnival. Admission costs $5 and each ride ticket costs $1.50. What is the maximum amount of tickets she can purchase? Create an inequality to represent the scenario and then solve.
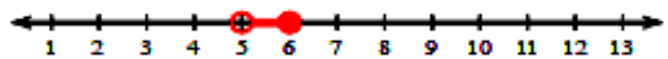
I Can Create and Graph Compound Inequalities.

18. Name the compound inequalities:
a.   b.

19. Graph the following compound inequalities:

a. -2 < x ≤ 3   b. x < 0 OR x ≥ 3

20. An iguana needs an environment between 70 degrees and 95 degrees. Write a compound inequality.

21. Water is not a liquid when it is less than 0 degrees Celsius or above 100 degrees Celsius. Write a compound inequality.
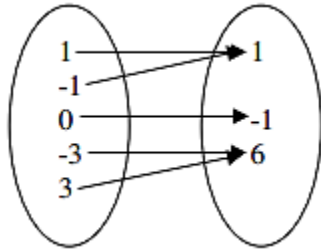
I Can Determine if a Representation is a Function.
22. Determine if the following representations are functions. Explain why or why not.

a.   b.   c.
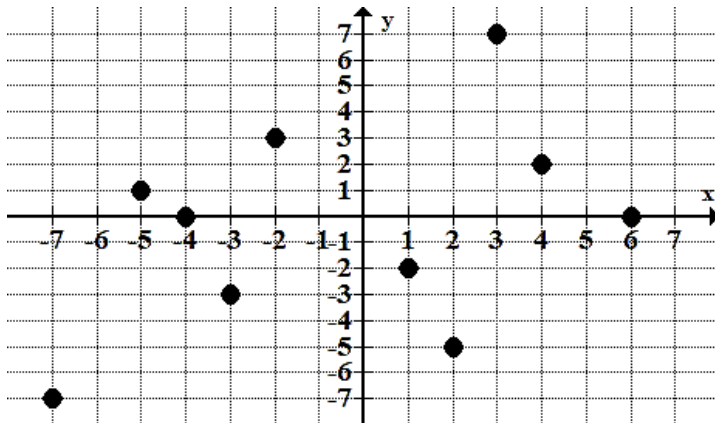
$$\{(-2,2),(0,5),(1,6),(1,7),(2,-1),(3,2)\}$$

x	y
-2	-1
-2	1
-1	0
1	0
2	1

I Can Evaluate a Functions in Multiple Representations.
23. Evaluate f(4) for the function $f(x) = x^2 + 3x - 1$.   24. Find the value of x if f(x) = 3 for the function f(x) = 6x – 15.

25. Evaluate using the graph:

a. f(-2) _____

b. f(x) = 7 _____

c. f(1) _____

d. f(x) = 1 _____

e. f(-4) _____

f. f(x) = -5 _____

g. Is this graph a function. Explain why or why not.

I Can Create a Function from a Context and Use it to Solve Problems.

26. A hot air balloon cruising at 1000 feet begins to ascend. It ascends at a rate of 200 feet per minute. Create a function f to represent the height of the balloon for m minutes.   How many minutes does it take to reach 3800 feet?

27. A fish tank filled with 12 gallons of water is drained. The water drains at a rate of 1.5 gallons per minute. Create a function f to represent the number of gallons remaining after m minutes. How many gallons are remaining after 4 minutes?

I Can Calculate Slopes and Y-intercepts.

28. Determine the slope and y-intercepts:

   a.   b.

x	2	5	6	8	10
y	3	9	11	15	19

   (0, -4) & (-3, 11)

I Can Put an Equation into Slope Intercept Form.

29. Solve for y: 4x + 2y = 8   30. Determine the slope and y-intercept: 3x – 6y = -12

I Can Graph a Function (both slope and standard).
Name the slope and y-intercept for the following functions. Then graph them.
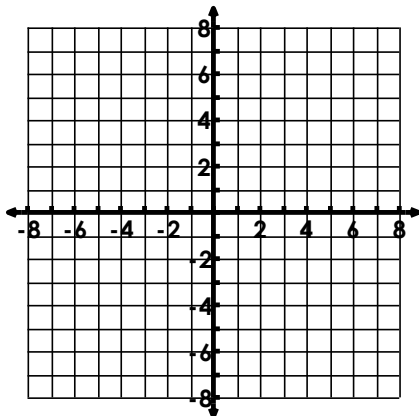
   31. $f(x) = -\frac{2}{3}x + 6$ 32. x = 3

   Slope: _____   Slope: _____

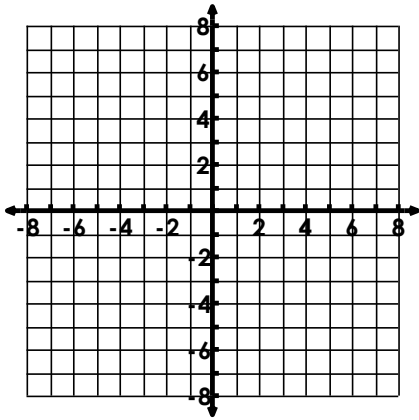   Y-int: _____   Y-int: _____
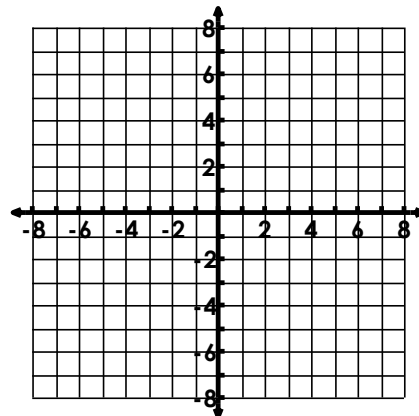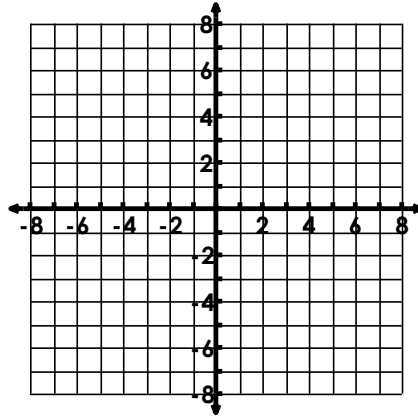
33. $-4x + 2y = 1$

Slope: _____

Y-int: _____

34. y = -4

Slope: _____

Y-int: _____

I Can Write Equations of Lines (Table, Graph, Points)

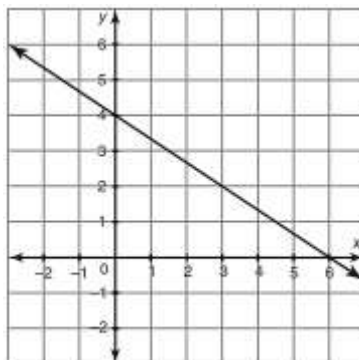35. Write the equation of the line that contains the points (-2, 2) and (2, -6).

36. Write the equation of the line that has a slope of $-\frac{1}{2}$ and contains the point (4, 6).

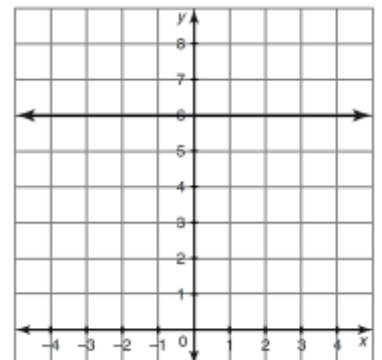37. Write the equation of the line the corresponds to the following table and graphs:

a.

x	2	4	6	8
y	-6	-4	-2	0

b.

c.

I Can Find and Apply Characteristics of Linear Functions to Real World Scenarios.

38. What are the x and y intercepts of the equation 3x – 6y = 24?

39. How many vitamins does Ethan take per day? How many vitamins were in the contain to start with?

Days Passed	Vitamins Remaining in Bottle
7	25
8	23
9	21
10	19

40. The graph below show the amount of water in a pool over time. Calculate and explain what the slope and y-intercept mean in terms of the graph below.

WATER IN POOL
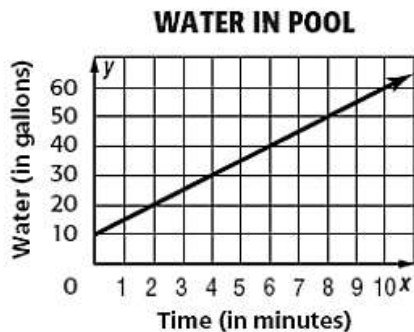
41. Julia received a gift card to the local movie theater. After going to 2 movies, the balance of her gift card dropped to $64. After going to 3 more movies, the balance of her gift card dropped to $40 remaining. What was her original gift card balance? Calculate the slope and y-intercept and explain what they mean in terms of the problem scenario.

42. Water is draining from a hot water heater:

Draining Water Heater
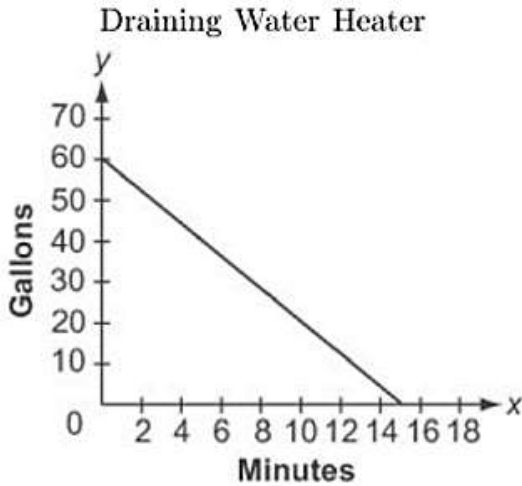
a. What is the domain?

b. What is the range?

c. What is the slope (simplified and labeled)?

d. What are the x and y intercepts? Interpret this in terms of the problem scenario.

e. Create an equation to represent the graph.

I Can Compare Linear Functions.

43. Using the scenario below, answer the following questions:

**Bombinoes' Pizza** is offering $56 per shift and $2.50 in commission for each pizza delivered.

Little Squeezer's showed Tony a table of salaries.

Pizzas	0	2	4	10
Salary	48	54	60	78

Pizza Tent has given Tony his pay options in the following function. S represents Tony's salary, and p represents the number of pizzas he delivers.

$$S = 2.75p + 52$$

Papa Ron's made their offer in the form of this graph.
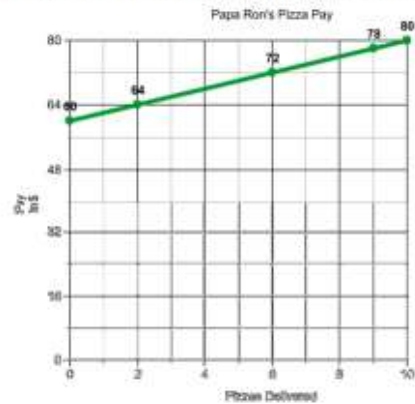
a. How much does each pizza place give a delivery worker for working one shift? Who pays the least?

b. How much does each pizza place give a delivery worker for delivering a pizza? Who pays the least?