Algebra 1 Semester 1 Study Guide

Name _____

Part 1 – This is part of your exam grade.

- **I can simplify and evaluate expressions.**

Simplify each expression.

1. $3[(15-3)^2 \div 4]$ 108

2. $|6-18|$ 12

3. $-3(2x-4)+10x$ 4x+12

Evaluate each expression.

4. $3a^2 + (b-c)$ for a = 2, b = 4, and c = 3 13

5. $|-x-2y|$ for $x=-2$ and $y=3$. 4

6. $-a + 2b + c$ for a = 2, b = -3, and c = 4 -4

7. $x(-y + z)$ for x = 3, y = -3, and z = -1 6

- **I can write and solve equations.**

8. Solve $\frac{4x}{8}+18=38$ X = 40

9. Solve $-(x-7)=4x+3(x-3)$ X = 2

10. Solve $7x+x-x-6=5x$ X = 3

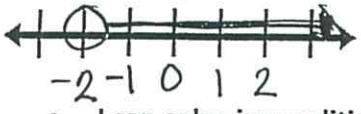
11. Solve $2(x+5)=5x+19$ X = -3

- **I can solve inequalities in one and two variables.**

12. Solve and graph the solution on a number line:

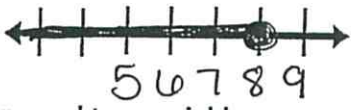
a) $5x+1>-3x-15$

x > -2



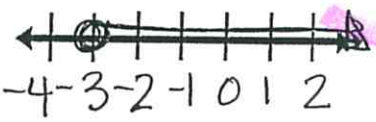
b) $3 \le -3(x-9)$

x ≤ 8



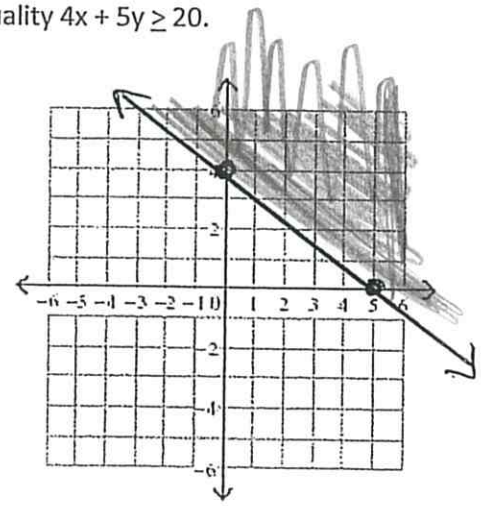
c) $11d-9<15d+3$

d ≥ -3



- **I can solve inequalities in one and two variables.**

13. Graph the solution set for the inequality $4x + 5y \ge 20$.



Function Essentials - I can evaluate a function using function notation.

14. If $f(x) = -2x + 2$, then find $f\left(\frac{1}{2}\right)$.

1

15. If $g(x) = -x^2 + 5x$, then find $g(-12)$

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- **I can determine the domain and range of a relation or a function.**

16. Given the following relation, what is the domain and range?

{(-2, 4), (-2, 0), (6, 5), (0, -2)}

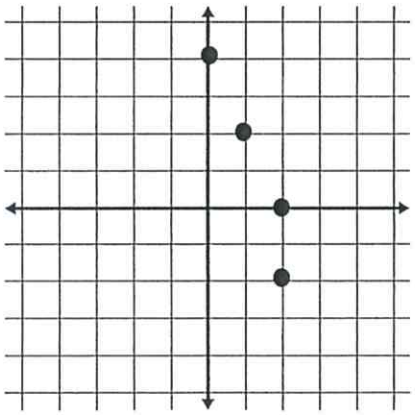
D: {-2, 0, 6}
R: {-2, 0, 4, 5}

17. Make a mapping diagram that represents the relation and determine whether the relation is a function.

$\{(-3,-6),(-1,-6),(5,-6),(8,-6)\}$

Yes

18. What is the domain and range of the relation shown? Is the relation a function?



No
Domain Repeats

19. Find the domain and range of the relation. Is the relation a function? Explain.

Height of Person (inches)	Shoe Size
29	2
36	3
54	3

D: {29, 36, 54}
R: {2, 3}

20. Given the function, $T(s) = 1/2s + 30$, where T is the time in minutes it takes to decorate the gym for a dance and s is the number of students on the decorating committee, answer the following:

a) What is a reasonable domain for this function? All positive, whole numbers

b) Find $T(12)$

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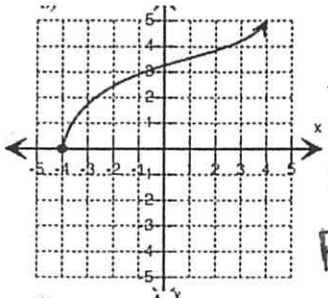
- **I can determine whether a relation is a function and identify the domain and range.**

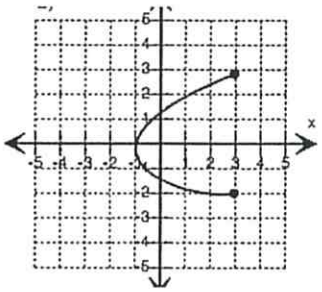
21. Determine if the relation is a function. State the domain and range of each graph.

a)



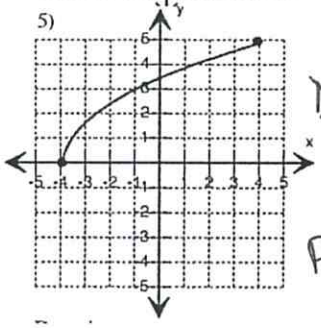
D: $[-4, \infty)$
R: $[0, \infty)$
Function

b)



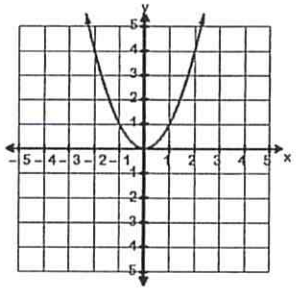
D: $[-1, 3]$
R: $[-2, 3]$
Not a function

c)



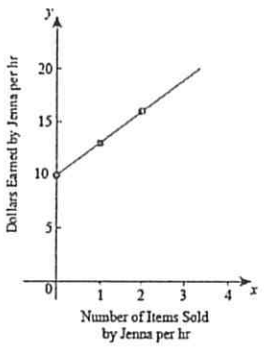
D: $[-4, 4]$
R: $[0, 5]$
Function

d)



D: $(-\infty, \infty)$
R: $[0, \infty)$
Function

22. Jenna works at a retail shop. She makes $10 per hour, plus $3 for each item she sells.
a) Explain why the graph represents this function.
b) Write an equation for this graph.



a) She starts @ $10/hour not $0 hour

b. $f(x) = 10 + 3x$ or $y = 3x + 10$

- **I can determine whether a number is rational or irrational.**

23. Decide whether the following are rational or irrational.

a) 2π I

b) $3\sqrt{4}$ R

c) $\sqrt{5}$ I

d) $\frac{2}{3} \cdot 3\frac{\sqrt{25}}{2}$ R

e) $\frac{2}{3}$ R

f) $\left(\sqrt{7}\right)^2$ R

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Part 2 – This is part of your exam grade.

Linear Function Essentials

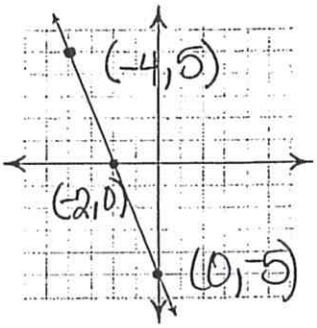
- **I can determine whether an ordered pair is a solution to the function.**

1. Which of the following is a solution to the function $f(x) = -\frac{1}{2}x - 6$

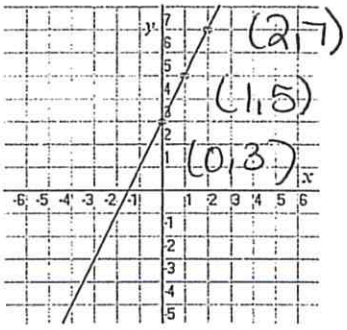
a) (-2, -5) -5 b) (0, 6) c) (6, -9) -9 d) (10, -1)

2. For each graph, list 3 solutions. What is the slope of each line?

a) solutions



b) solutions



3. a) The rate of change is constant in the table. Find the rate of change. Explain what the rate of change means for the situation. $\frac{42}{1}$ 42 miles per hour

b) Write a linear equation that models the table if t = time and d = distance. t(d) = 42d

c) What is the y-intercept for this data? Explain what the y-intercept means for this situation.

Time (in hours)	Distance (in miles)
4	168
6	252
8	336
10	420

y = 42 x

- **I can find the slope and y-intercept of a linear equation.**

Find the slope and *y*-intercept of each line.

4. y = -3x + 7 m = -3 b = 7

5. y = -16 + 6x m = 6 b = -16

- **I can write a linear equation.**

6. Write an equation for a line with slope –¾ and y-intercept 5.

y = -3/4 x + 5

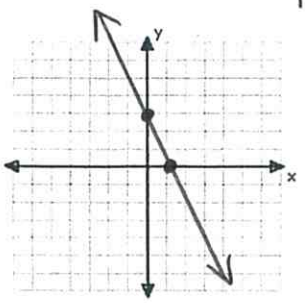
7. Write an equation for a line with slope 4 and y-intercept -7.

y = 4x - 7

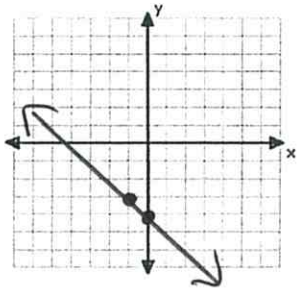
- I can graph a linear equation.
- I can determine characteristics of linear functions.

Use the slope and *y*-intercept to graph each equation.

8. $y = -3x + 3$ $m = -3$ $b = 3$

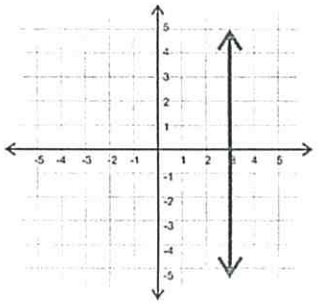


9. $y = -x - 4$

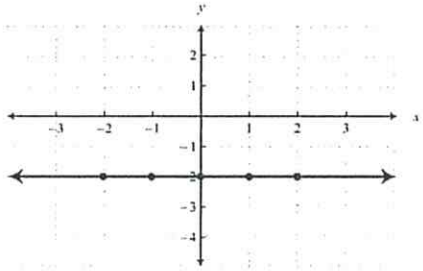


Write an equation for each line below and state whether the slope is 0 or undefined.

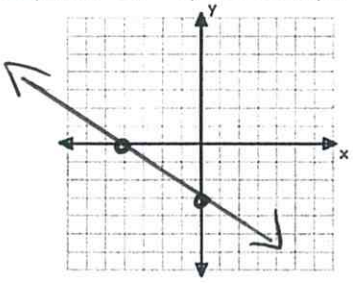
10. slope = undefined



11. slope 0



12. Find the x- and y- intercept for $-3x - 4y = 12$. Graph the equation.



13. A line passes through (2, -4) and (-2, 6). Write an equation for the line. $-5/2$

14. Write an equation for the line that is parallel to $y = -5x + 3$ and passes through (-4, 2). $y + 4 = -5/2(x - 2)$

$y - 2 = -5(x + 4)$

or

$y = -5x + 18$