Name_____ Date_____ Per_____

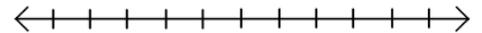# Integrated Math I Final Exam Semester 1 Study Guide

## I. Equations

**Solve the following equations.**

1.) $\frac{3}{4}x = 9$  2.) $\frac{4x}{5} = 4$  3.) $-3x + 2 = 5$  4.) $-2(x - 5) = 6$

5.) $2x + 3(x - 2) + 1 = 10$  6.) $\frac{1}{2}(2x - 4) = 7$  7.) $-7x + 2(x - 4) = 7$

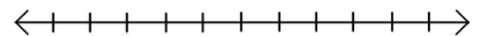8.) $|x - 3| = 5$  9.) $2|x + 1| = 4$  10.) $-|x - 2| + 5 = 3$

## II. Inequalities

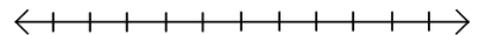**Write and graph the inequality that represents the scenario.**

11.) You must be at least 21 years of age to consume alcohol.



12.) Sam can sell his used laptop for no more than $300.



13.) Vanessa has at most $100 in her savings account.



**Solve each inequality and graph.**

14.) $2x + 4 < 6$  15.) $-5x - 1 \geq 9$  16.) $-5 \leq 3x + 1 < 4$

17.) $2x + 1 < 5 \ \ or \ \ x + 5 \geq 10$  18.) $2x > 10 \ \ and \ -3x \leq 6$

19.) $2|x - 1| \leq 4$  20.) $|3x + 2| > 8$

## III. Functions

**Identify the independent and dependent quantities in each situation, fill in the table, then write the function to represent it.**

21.) Atzin can type at a rate of 30 words per minute.

      a.) Independent quantity?  b.) Dependent quantity?  c.) Funtion:

      d.) Rate of change (slope):

22.) For babysitting, Jaylin charges a flat fee of $3, plus $5 per hour.

a.) Independent quantity?  b.) Dependent quantity?  c.) Funtion:  d.) Rate of change:

23.) Selena collected 100 pounds of aluminum cans to recycle. She plans to collect an additional 25 pounds each week.

      a.) Independent quantity?  b.) Dependent quantity?  c.) Funtion:

      d.) Rate of change (slope):

# Integrated Math I Final Exam Semester 1 Study Guide

**Use the given information to answer the following.**

24.) An Airplane is descending to land at the airport. During its descent it had to fly in circles until the landing was cleared of other planes. Explain what is occurring during each of the segments. What are the independent and dependent quantities?
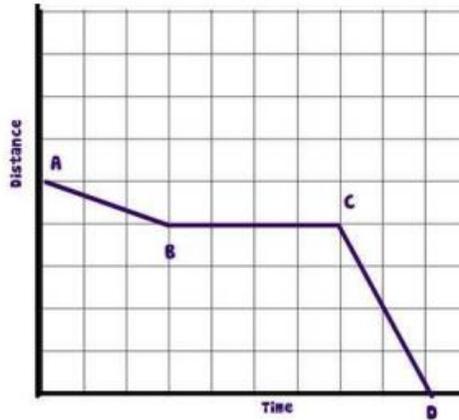


25.) Jen left her house and drove to school in the morning, as shown in the accompanying graph. On her drive to school she realized that she forgot her book bag and had to return home before driving back to school for a 3 hour class. Explain what is happening during each part of the graph below. What are the independent and dependent quantities?
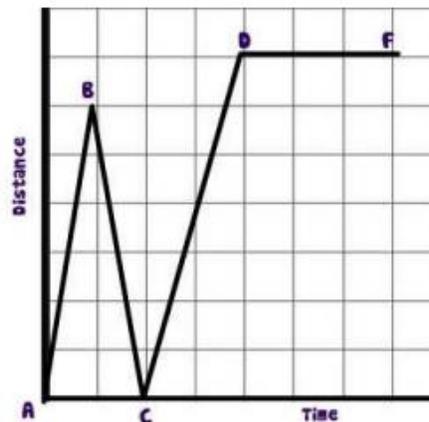


**Given the characteristics of each graph, complete the following:**

26.) Create a function and sketch the graph that:

      a.) has a minimum          b.) is continuous     c.) is a quadratic function.
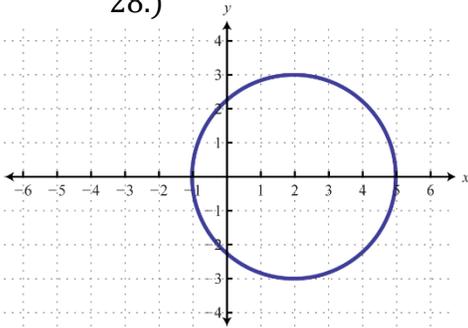
27.) Create a function and sketch the graph that:

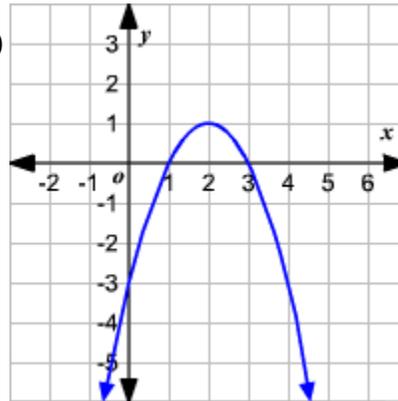      a.) has a maximum        b.) is continuous     c.) is an absolute value function.

# Integrated Math I Final Exam Semester 1 Study Guide

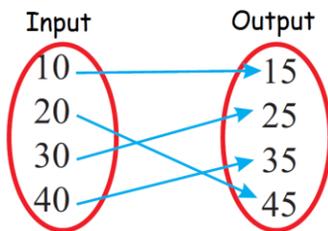**Find the domain and range of the following relations, express if the relation is a function.**
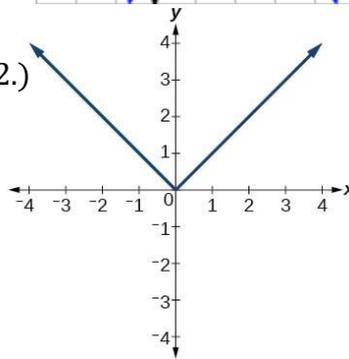
28.)

29.)

30.)

| X | Y |
|---|---|
| 1 | 2 |
| 2 | 4 |
| 1 | 5 |
| 3 | 8 |
| 4 | 4 |
| 5 | 10 |

31.)

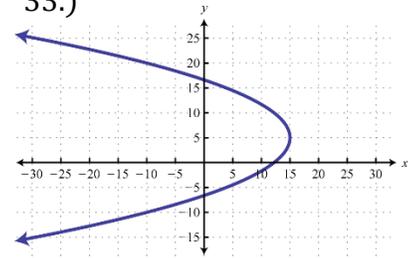Input    Output
10 → 15
20 → 25
30 → 35
40 → 45

32.)

33.)

**Classify the following as linear, absolute value, quadratic, or exponential functions?**
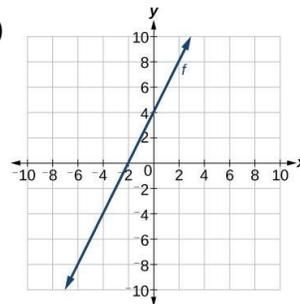
34.) $f(x) = x^2 + 2x - 4$
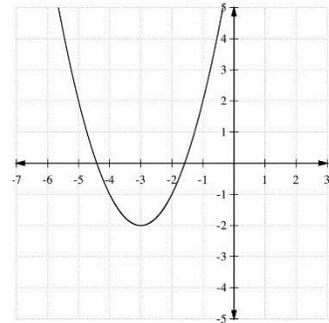
35.) $f(x) = -2x + 3$

36.) $f(x) = 2^x$

37.) $f(x) = 2|x - 1|$

38.)

39.)

## IV. Linear Functions

**Graph the following linear functions.**

40.) $y = -\frac{2}{3}x + 4$

41.) $3x - 4y = 12$

42.) $y - 3 = \frac{1}{2}(x + 4)$

43.) $y = 2x - 3$

44.) $2x + 3y = 6$

45.) $y + 5 = 3(x - 1)$

# Integrated Math I Final Exam Semester 1 Study Guide

**Determine if the lines are parallel, perpendicular, or neither.**

46.) $y = 2x - 5$
$y = -\frac{1}{2}x = 3$

47.) $y = \frac{3}{4}x - 5$
$3x + y = 4$

48.) $y = -3x - 2$
$6x + 2y = 8$

**Evaluate the linear function for the given values.**

49.) $f(x) = -2x + 3$      f(2) =      f(-3) =      f(5) =

**Find the slope of the given lines.**

50.) $(-2, 3) \& (4, 5)$      51.)
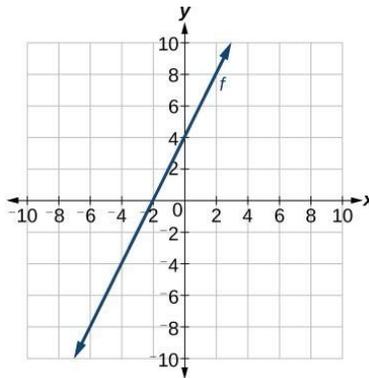
52.)

| x | y |
|----|----|
| -2 | -4 |
| -1 | -1 |
| 0 | 2 |
| 1 | 5 |
| 2 | 8 |

**Write the equation of the line in slope intercept form.**

53.) $m = \frac{2}{3}$ through point (0, -5)      54.) $-4x + 2y = 10$      55.) $(2,5) \& (-1,8)$

56.) Jasmine Velez creates and sells her own hair clips for $15 each. Each month she gives away 5 hair clips to a select group of friends, Kiana, Jaylin, Amy, Devany, and Brianna to test them out for the public. Write the linear equation for this situation in slope intercept form.

**Write the equation in point-slope form.**

57.) $m = 3$ through point (-2, 5)      58.) (1, 5) & (2, 3)

59.) Write the equation of the line in point-slope form that is parallel to $y = 2x - 1$ and passes through (3, 5).

60.) Write the equation of the line in point-slope form that is perpendicular to $y = -3x + 2$ and passes through (1, 4).

# Integrated Math I Final Exam Semester 1 Study Guide

### Arithmetic Sequences

61.) Determine if the sequence is arithmetic or not.

a.)  3, 4, 6, 9, 13, …                     b.)  -5, -3, -1, 1, 3, …

62.)  Jorge Morales is getting better at math.  On his first quiz he scored 57 points, then he scores 61 and 65 on his next two quizzes.  If his scores continued to increase at the same rate, what will be his score on his 9th quiz?

### Statistics

63.) . The students in one social studies class were asked how many brothers and sisters (siblings) they each have. The dot plot here shows the results.
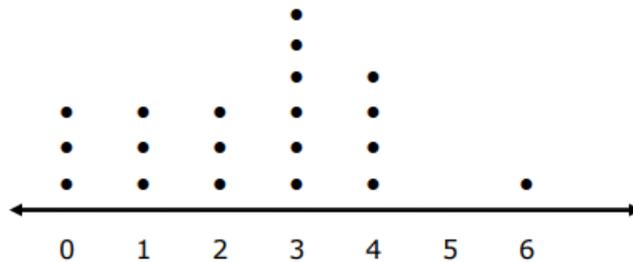


a.)  Describe the distribution of the data in terms of skewness.

b.)  What is the median of the data?

c.)  How many students have six siblings?

d.) How many students have no siblings?

e.)  How many students have 3 or more siblings?

64.)  The histogram below represents the results of a survey conducted from a local university asking recent graduates the amount of their first year salary.

a.)  How many recent graduates make less than 44,000 dollars?

b.)  How many graduates are represented in the data?

c.)  How many graduates have a salary of at least %55,000?

d.)  Describe the distribution of the data? (skewness)

Name_____ Date_____ Per_____
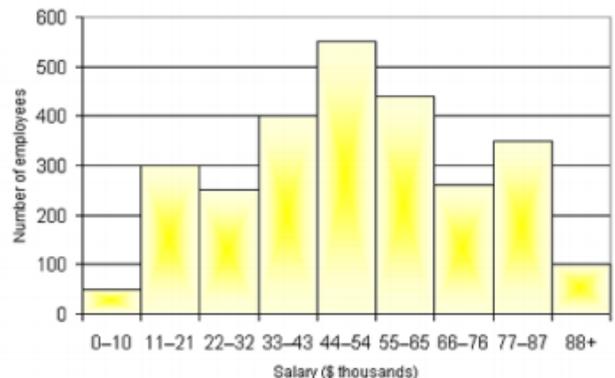
# Integrated Math I Final Exam Semester 1 Study Guide

65.)

**Average Minutes Per Night Spent On Homework**



0    20        48   60                                    190

a.)  What is the IQR?

b.)  What is the minimum number of minutes spent on homework?

c.) What is the median amount of minutes?

d.)  What is Quartile 1?

e.)  What is Quartile 3?

f.)  What is the maximum number of minutes spent on homework?


66.)  24, 12, 10, 15, 10, 22, 12


mean: _____  median: _____  mode: _____  range: _____


## Calculator Part of Study Guide

66.)

The table below gives the amount of time students in a class studied for a test and their test scores. Graph the data on a scatter plot, find the line of best fit, and write the equation for the line you draw.

| Hours Studied | 1 | 0 | 3 | 1.5 | 2.75 | 1 | 0.5 | 2 |
|---|---|---|---|---|---|---|---|---|
| Test Score | 78 | 75 | 90 | 89 | 97 | 85 | 81 | 80 |

Linear Regression Equation: _____

Correlation Coefficient (r): _____

Type of Correlation: _____

Is the correlation strong? Explain

Using the linear regression equation predict a students test score if they studied for 4 hours.