Name: _____

Date: _____Period: _____

Directions: Complete the following problems. Show all of your work. You MUST write your answer in the answer blank. Remember to include labels when necessary!

		Answers
1) Solve: $2x + 3x + 5 = 15$	2) Simplify: $8x - 3x^2 + 7 + 8x^2 - x - 9 + 4x$	1) _____
3) Simplify the expression below when $x = -4$ and $y = 5$. $x^2 + (xy)^2$	4) Simplify: $2(3 - x) - 12 + 4x$	2) _____

1) Solve: $2x + 3x + 5 = 15$

2) Simplify: $8x - 3x^2 + 7 + 8x^2 - x - 9 + 4x$

3) Simplify the expression below when $x = -4$ and $y = 5$. $x^2 + (xy)^2$

4) Simplify: $2(3 - x) - 12 + 4x$

5) You place a steel ball with a diameter of 4cm in a water-filled cylinder that is 5cm in diameter and 10cm high. What volume of water will spill out of the cylinder? Use 3.14 for pi.
$V_{sphere} = 4\pi r^3/3$ $V_{cylinder} = \pi r^2 h$

6) A 14 inch candle and a 20 inch candle are lit at 2:00pm. The 14in candle burns 0.5 inches every hour. The 20in. candle burns two inches every hour. At what time will the two candles be the same height?

7) A tennis ball is dropped from a height of 60ft. If the ball bounces half as high on each successive bounce, what is the height on the fourth bounce?

8) Kylie bought some pencils. She paid $1.24, including tax, per pencil. She gave the cashier $20 and received $5.12 in change. How many pencils did Kylie purchase?

9) Which statement is true?

| Ed | 100 | 50 | 90 | 90 | 70 | 70 | 70 |
| Jo | 70 | 60 | 80 | 90 | 90 | 100 | 80 |

A. Ed's median is higher than Jo's median.
B. Ed's median is lower than Jo's median.
C. Ed's median is the same than Jo's median.
D. The median scores cannot be determined.

10) A light year is defined as the distance light travels in one year. One light year is 9.46×10^{12} kilometers. A galaxy is 150,000 light years wide. About how many kilometers wide is the galaxy?
    A. 1.419×10^{16} B. 1.419×10^{17}
    C. 1.419×10^{18} D. 1.419×10^{19}

11) The area of a square is 49cm^2. What is the perimeter of the square?

12) The following set of data shows the number of cars a company sold in the past 10 days. Find the mean.
    1 5 3 2 1 0 4 2 6 1

13) A 5 pound bag of apples costs $4.50 and an 8 pound bag of the same type of apples costs $7.52. Greg found the cost per pound for each bag of apples. What is the difference in their unit prices?

14) Susan's weekly earnings are proportional to the number of hours she worked. How much money did Susan earn per hour?

Hours	5	7	9	11
$	47.50	66.50	85.50	104.50

15) A car rental company charges $34 per day of a rented car and $0.50 for every mile driven. A second car rental company charges $20 per day and $0.75 for every mile driven. What is the number of miles at which both companies charge the same amount for a one-day rental?

Answers
1) _____
2) _____
3) _____
4) _____
5) _____
6) _____
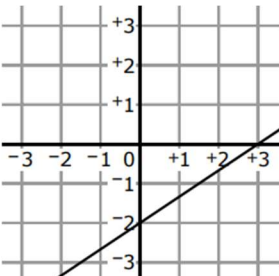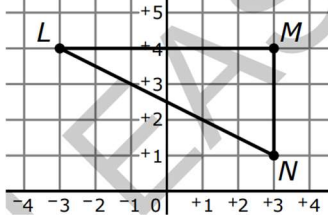7) _____
8) _____
9) _____
10) _____
11) _____
12) _____
13) _____
14) _____

15) GRID RESPONSE

Spiral 9/16   Name: _____

Math 1   Date: _____Period: _____

Directions: Complete the following problems. Show all of your work. You MUST write your answer in the
answer blank. Remember to include labels when necessary!

		Answers
1) Solve: $0.25x + 7 = 4(x - 2)$	**2)** Solve: $12(x - 2) + 3x = 0.5(x + 6) + 2$	1) _____

3) Write the equation of the linear function in **slope-intercept form?**

4) In which choice do all three points lie on the same straight line?
A (0, 1), (−1, 3), (1, 3)
B (4, 2), (2, 1), (4, −2)
C (0, 0), (8, 0), (0, 8)
D (1, 2), (2, 4), (4, 8)

5) Mary is enrolled in a class that is

Week #	3	4	5
Length (seconds)	150	180	210

practicing public speaking. Each week she must give a longer speech than the week before. If the pattern continues, what week will she give a 12 minute speech?

6) Marcy is taking two types of medicine. She takes one medicine every 6 hours. She takes the other medicine every 4 hours. She takes both medicines at 9:00 a.m. At what time will Marcy take both medicines together again?

7) Michael started a savings account with $300. After 5 weeks, he had $350 dollars, and after 10 weeks, he had $400. What is the rate of change of money in his savings account per week?

8) What is the slope of segment LN?

9) The price of a theater ticket increased from $7.50 to $7.75. The theater sold 315 tickets at the higher price. With the price increase, how much more did the theater earn on the tickets?

10) What is the difference between the mean and the median of the data set?
        1 7 1 7 2 8 3 8 4 9

11) Given that f(1)=3 and there is a common difference of 5, what are the first 3 terms of the sequence?

12) Given that a sequence is geometric and that f(1)=3 and f(2)=6, what is f(5)?

13) Given that f(1)=1 and there is a common ratio of 3, what are the first 3 terms of the sequence?

14) Given that a sequence is arithmetic and that f(1)=3 and f(2)=6, what is f(5)?

15) A sequence is modeled by the following equations.   Determine the 100th term in the sequence.   f(n)=f(n-1)+4; f(1)=8   f(n) = 4n + 4

Answers:
1) _____
2) _____
3) _____
4) _____
5) _____
6) _____
7) _____
8) _____
9) _____
10) _____
11) _____
12) _____
13) _____
14) _____

15) GRID RESPONSE

Name: _____

Date: _____Period: _____

Directions: Complete the following problems. Show all of your work. You MUST write your answer in the answer blank. Remember to include labels when necessary!

1) What are the first 3 terms of the sequence? $f(1) = 6$ $f(n) = \frac{1}{3} f(n-1)$	2) Which equation could be used to find the nth term of the sequence? 2, 5, 8, 11, 14, … A. y = 3n – 1 B. y = 3n – 3 C. y = 3n + 2 D. y = 2n + 1	**Answers** 1) _____ 2) _____
3) Which term of the sequence is equal to 137? 2, 7, 12, 17, 22, …	4) What is the value of the term a_4? $a_1 = 5$ and $a_n = 3a_{n-1}$	3) _____ 4) _____

5) A restaurant's milkshake sales are shown in the table. If the average number of milkshakes sold is 50, how many milkshakes were sold on Tuesday?

Day	Number of Milk Shakes
Monday	35
Tuesday	x
Wednesday	32
Thursday	62
Friday	73

6) What is the median age range of the club members?
A. 18-24 yrs
B. 25-31 yrs
C. 32-38 yrs
D. 39-45 yrs

5) _____

6) _____

7) Solve: 4(2x – 3) = 5x – 42 – 2x

8) Solve: 10x – 24 – 3x = 0.5(14x – 24)

7) _____

8) _____

9) _____

10) _____

9) SU intersects TV at point R. What is the value of x, in degrees?

10) The average daily high temperature in degrees Celsius for the month of April in Raleigh is approximated by the function f(n) = 0.2n + 80 where n is the day of the month. What was the maximum high temperature that occurred on April 17th?

11) _____

12) _____

13) _____

14) _____

11) Morris Park is square shaped with an area of 2500 square miles. The park service wants to put boundary fence up around the entire park. How many feet of fencing needs to be purchased to complete the project?

12) Last year, a sweet potato farmer harvested 189 potatoes from 9 plants. If he grows 14 plants this year, how many potatoes can he expect to have?

13) Write the equation of the line with a slope of – 5 and a y-intercept of $\frac{1}{3}$.

14) What is the value of x in the equation shown below? $x^3 + 1 = 9$

15) What is the slope of the line that passes through the points (2, 3) and (8, 6)?

15) GRID RESPONSE

Name: _____

Date: _____Period: _____

Directions: Complete the following problems. Show all of your work. You MUST write your answer in the answer blank. Remember to include labels when necessary!

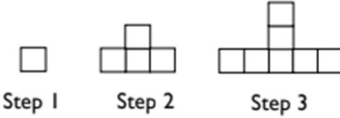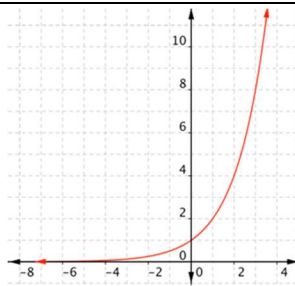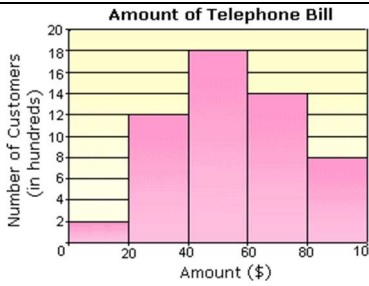|		
1) f(n)=4n+2 and g(n)=4(2^n) What is f(3) + g(5)?	2) Given a_1 = -2 and a common difference of 5, what is the sum of the first 5 terms?	**Answers** 1) _____ 2) _____ 3) _____ 4) _____ _____ 5) _____ 6) _____ 7) _____ 8) _____ 9) _____ 10) _____ 11) _____ 12) _____ 13) _____ 14) _____
3) Ms. Kelly discovered a new strain of bacteria. The bacteria culture initially contained 1000 bacteria and they are doubling every half hour. How many bacteria there will be in 5 hours?	4) Write a recursive equation to model the diagram. Step 1 Step 2 Step 3	
5) This graph is an example of which type of function? A. arithmetic growth B. arithmetic decay C. geometric growth D. geometric decay	6) The histogram shows the amount paid for telephone bills of hundreds of customers in a certain city. How many customers had bills of at least $40 but less than $60? Amount of Telephone Bill	
7) A plumber charges a one-time service fee of $20 in addition to his hourly rate of $25 per hour. If the plumber went to your house to work on your bathtub and toilet and the bill came to $282.50, how many hours did it take him to complete the job?	8) ALL of the following are examples of quantitative data EXCEPT for which one? A. The number of students in a first grade class B. The weights of students in a first grade class C. The heights of students in a first grade class D. Which teacher the first graders have	

9) Given the frequency table, what is the mean number of hours that students spent studying for their math test?

Hours	Frequency
0	7
1	9
2	2
3	0
4	1

10) Corrin and Kathryn are playing a game. They both start the game with 50 points. At the **end** of each turn, Corrin gets 100 more points. At the **end** of each turn, Kathryn's score doubles. At the **start** of which turn will Kathryn first have more points than Corrin?

11) A pool is being emptied and the water is decreasing linearly. At 9:00 a.m. the water depth was 10.3 feet. It is now 11:30 a.m. and the water is 8.3 feet. What will the depth of the water be at 2:00 p.m.?	12) After knee surgery, your trainer tells you to return to your jogging program slowly. He suggest jogging for 12 minutes each day for the first week. Each week thereafter, he suggests you increase that time by 6 minutes. How many weeks will it be before you are up to 60 minutes per day?
13) Suppose you invest $1000 in the bank. You leave the money in for 3 years, each year getting 5% interest. How much money do you have in the bank after 3 years?	14) Write an explicit equation to model the situation in #13.

15) Solve: $4(2x + 3) = 31 - 3(x - 1)$

15) GRID RESPONSE

Name: _____

Date: _____Period: _____

Directions: Complete the following problems. Show all of your work. You MUST write your answer in the answer blank. Remember to include labels when necessary!

		Answers
1) What is the value of $-2(4^2+(1/2)^2)$? Write your answer as an improper fraction or a decimal, not a mixed number.	2) What value of x satisfies the equation below? $3(2x – 4) + 5x = 0.5(x + 6) + 0.75$	1) _____
3) A cylindrical barrel has a height of 8 feet and a diameter of 6 feet. What is the approximate volume of the barrel?	4) What is the slope of the line that passes through the points (-3, -2) and (2, -4)?	2) _____ 3) _____
5) A notebook costs $4.50 plus sales tax. After sales tax, the notebook is $4.86. What is the sales tax rate? A 6% B 7% C 8% D 9%	6) Which of the following statements is true? A. Every rational number is an integer. B. Every whole number is a rational number. C. Every irrational number is a natural number. D. Every rational number is a whole number.	4) _____ 5) _____ 6) _____
7) What is the rate of change of the linear function that has a graph that passes through the points (2, 9) and (−1, 3)?	8) Jacob is 12 years younger than twice Elizabeth's age. Jacob is 28 years old. How old is Elizabeth?	7) _____ 8) _____
9) Write the equation of the line below. (**slope-intercept form**) **My allowance** 10) If $f(1) = 4$ and $f(n) = f(n-1) \times 2$, what is the second term's value? **I wish my allowance was this**		9) _____ 10) _____ 11) _____ 12) _____ 13) _____ 14) _____
11) Solve for k. $\dfrac{3 + k}{11} = 2$	12) Write the **slope-intercept form** of the equation of the line through the given points. (−5, 0) and (−4, 4)	15) GRID RESPONSE
13) After one year, how much interest would there be on a loan of $2500 that is borrowed at 9% interest?	14) "At the start of a carnival, you have 50 ride tickets. Each time you ride the roller coaster, you have to pay 6 tickets." Linear or exponential?	
15) Solve: $2.1x – (1 + 4.2x) = 5.3$		

Name: _____

Date: _____ Period: _____

Directions: Complete the following problems. Show all of your work. You MUST write your answer in the answer blank. Remember to include labels when necessary!

1) The total cost, in dollars, of membership in a fitness center is given by the function c(m) = 20m + 40, where m is the number of months a person is a member. In dollars, how much is the cost of a membership for 1 year?	2) A club began with 3 members. Each month, each member brought one new member. Which function can be used to determine the number of members x months after the club began? A f(x) = 2x + 3 C f(x) = 1.5(2)x B f(x) = 3x + 1 D f(x) = 3(2)x	**Answers** 1) _____ 2) _____ 3) _____
3) A function is shown below. g(x) = 19.60 + 1.74x What is the value of g(30)?	4) The function a(n) = 3n – 7 represents the value of the nth term in a sequence. What is the sum of the 1st and 5th terms of the sequence?	4) _____ 5) _____
5) Every ten years, the Census counts how many people are living in every town in the United States. The 2010 Census showed that 1,000 people were living in Appleville, and 4,000 people were living in Bridgetown. The population of Appleville is predicted to double every ten years. The population of Bridgetown is predicted to increase by 1,000 every ten years. If the predictions come true, what will be the first census year that will show Appleville with a larger population than Bridgetown?	6) What is the equation of the graph below in **slope-intercept form**? A. y = 2/3 x – 2 B. y = 2/3 x + 3 C. y = 3/2 x – 2 D. y = 3/2 x + 3	6) _____ 7) _____ 8) _____ 9) _____

7) Which is an irrational number?
    A. $4\pi/\pi$ C. $\sqrt{18}$
    B. $\sqrt{6^2}$ D. 21.989
	8) Which is equivalent to $-\frac{1}{2}\left(\frac{1}{4}x - \frac{3}{8}\right)$
	
	A $\frac{-1}{8}x + \frac{3}{16}$ C $\frac{1}{8}x - \frac{3}{16}$
	
	B $\frac{-1}{8}x + \frac{3}{8}$ D $\frac{1}{8}x - \frac{3}{8}$
		10E) _____
		
		10R) _____
		
		11 – 1st) _____

9) Solve: -5 = $\frac{y-7}{9}$	10) Write an explicit and recursive formula for the following sequence -4, -6, -8, -10, …	11 – CD) _____ 12) _____

11) 10, 17, 24, 31, 38
    First term: ____
    Common difference: ____
	12) 2n² + 10n Find n=3	13) _____
		
		14E) _____

13) Maria invests $6,154 in a savings account with a fixed annual interest rate of 8% compounded continuously. What will the account balance be after 10 years?	14) Write an explicit and recursive formula for the following sequence 3, 9, 27, 81, …	14R) _____ 15) GRID RESPONSE
15) What is the slope of the line that passes through the points (2, 3) and (8, 6)?		

Spiral 9/20   Name: _____
Math 1   Date: _____Period: _____
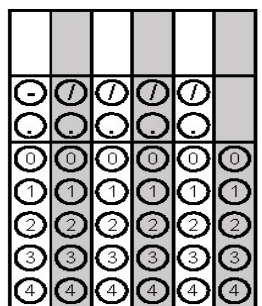
<u>Directions</u>: Complete the following problems. Show all of your work. You MUST write your answer in the answer blank. Remember to include labels when necessary!

Answers	

1) The table represents the average weight of a type of plankton after several weeks. What is the average rate of change in weight of the plankton from week 8 to week 12?

Time (weeks)	Weight (ounces)
8	0.04
9	0.07
10	0.14
11	0.25
12	0.49

2) Dennis compared the y-intercept of the graph of the function f(x)=3x + 5 to the y-intercept of the graph of the linear function that includes the points in the table. What is the difference when the y-intercept of f(x) is subtracted from g(x)?

x	g(x)
-7	2
-5	3
-3	4
-1	5

3) Delaware has an area of 2,000mi². Which is true if Delaware is included in the data set?

State	CT	GA	MY	MA	NH	NY	NC	PA
Area (1000s of mi²)	6	59	12	11	9	54	54	46

A. The range decreases
B. The median increases
C. The mean decreases

4) The area of a trapezoid is found using the formula A $= \frac{1}{2}$ h (b₁ + b₂). Write a simplified expression to represent the area of the trapezoid shown.

$b_1 = x - 3$
$h = 4$
$b_2 = x + 7$
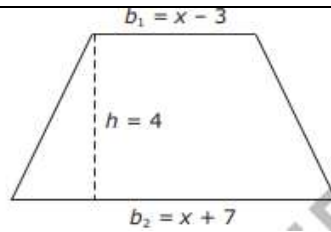
5) Write an explicit and recursive formula for the following sequence
       -15, -4, 7, 18, …

6) Write an explicit and recursive formula for the following sequence
       2, 0.5, 0.125, 0.03125, …

7) Solve: -3(4x + 3) + 4(6x + 1) = 43

8) What is the slope of the line that passes through (-4, -3) and (-2, -2)?

9)   What is the equation in **slope-intercept form** of an equation the goes through the points (0, -3) and (1, 1)?

10) What is the equation in **point-slope form** of an equation that goes through the points (0, 3) and (3, 1)?

11) A single bacterium is placed in a dish and is tripling each minute. How many bacteria are there after 20 minutes?

12) A painting purchased for $10,000 in 2000 increased in value by 8% per year. What is its value in 2010?

13) What is the slope of the line that passes through (5, -3) and (-2, -3)?

14) Momma Bigbucks is at it again. She purchased a car for $25,000. The value of the car depreciates at a rate of 15% annuarlly. What will be its value after 5 years?

15) Two boys, Shawn and Curtis, went for a walk. Shawn began walking 20 seconds earlier than Curtis. Shawn walked at a speed of 5 feet per second and Curtis walked at a speed of 6 feet per second. For how many seconds had Shawn been walking at the moment when the two boys had walked exactly the same distance?

Answers

1) _____
2) _____
3) _____
4) _____
5E) _____
5R) _____
6E) _____
6R) _____
7) _____
8) _____
9) _____
10) _____
11) _____
12) _____
13) _____
14) _____
15) GRID RESPONSE

Name: _____

Date: _____Period: _____

Directions: Complete the following problems. Show all of your work. You MUST write your answer in the answer blank. Remember to include labels when necessary!

		Answers
1) Yes or No: Is the following a function? 2) Using the Vertical Line Test, determine if the following is a function.		1) _____ 2) _____ 3) _____ 4) _____

1) Yes or No: Is the following a function?

2) Using the Vertical Line Test, determine if the following is a function.

3) Solve to find BOTH solutions.
$$x^2 + 14 = 210$$

4) Yes or No: Is the following a function?   {(1, 4) (3, 5) (5, 7) (2, 5)}

5) Find the volume of a cylindrical cone with a radius of 2 inches and a height of 15 inches.

6) Solve the following equation:
$$2(a - 4) + 15 = 13$$

7) Is the following a function?

x	y
1	5
2	7
3	2
4	8

8) Find the area of the triangle.

13 cm

15 cm

9) A bouncy ball has a diameter of 4.5 inches. Find the volume of the ball.

10) Solve the following equation:
$$5(r + 3) = 2r + 6$$

11) What is the slope between:
(-4, 6) and (4, -1)

12) Write an equation in **slope-intercept form** for the line passing through (-5, 13) and (-10, 9).

13) Write the explicit equation:

x	y
1	5
2	7
3	9

14) Write the explicit equation:

x	0	1	2
y	-1	2	-4

15) In the table below, what is the value of y when x=4?

x	-1	0	1	2	3	4
y	9	12	15	18	21	

Answers

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) GRID RESPONSE