April 22, 2019, Monday

3. Which explicit formula describes the pattern in this table?

d	C
0	1
1	6
2	36
3	216

A. $C = 6d$
B. $C = d + 6$
C. $C = 6^d$
D. $C = d^6$

$C = 6^0$
$C = 1$

$C = 6^1$
$C = 6$

$C = 6^2$
$C = 36$

$C = 6^3$
$C = 216$

4. If $f(12) = 100(0.50)^{12}$, which expression gives $f(x)$?

A. $f(x) = 0.50^x$
B. $f(x) = 100^x$
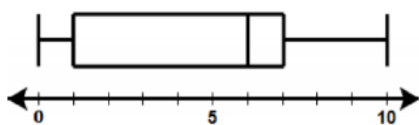C. $f(x) = 100(x)^{12}$
D. $f(x) = 100(0.50)^x$

$f(x) = 100(0.50)^x$

.4 Sample Items
　　3. C　　4. D

Algebra 1 ~ U6 Day 4   **In-Class Assignment**   Name_____
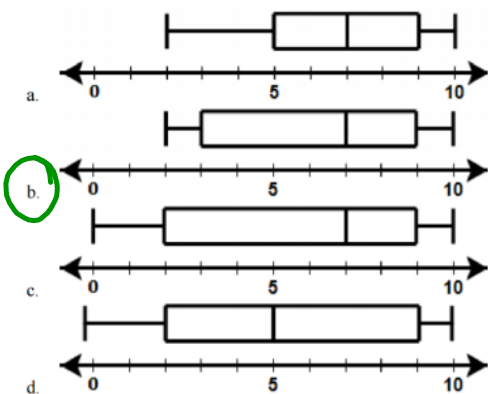
1)

What is the median of the data set? **6**

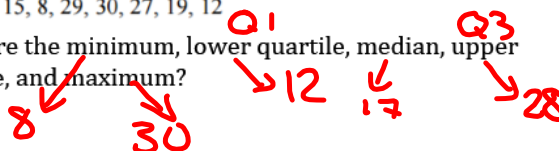What is the IQR?   What is the range?

$IR = Q3 - Q1 = 7 - 1 = 6$ Max - Min

$10 - 0 = 10$

2) Consider the following ordered data set:

2, 3, 5, 7, 7, 9, 10

Which is the correct box plot of the data above?
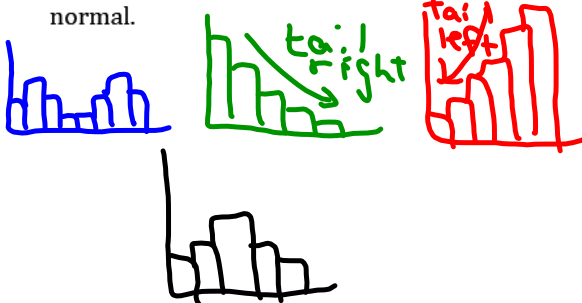
a.

b. (circled)

c.

d.

3) Consider the following unorganized data set:

12, 15, 8, 29, 30, 27, 19, 12

What are the minimum, lower quartile, median, upper quartile, and maximum?

Q1 → 12   Q3 → 28

8   30 $\frac{15}{17}$

4) Sketch one of each: bimodal, skew right, skew left, and normal.

tail right   tail left

5) Complete the two-way table for 9th grader's school transportation survey. Based on the table, answer the following questions:

	Male	Female	Total
Walk	34	46	80
Car	28	17	45
Bus	15	12	27
Bike	52	17	69
Total	129	92	221

a) What is the probability of choosing a female who walks school? $\frac{46}{221} = .21 = 21\%$

b) What is the probability of randomly choosing a person who rides the bus? $\frac{27}{221} = .12 = 12\%$

c) Out of the students who prefer walk to school, what percentage are female? $\frac{46}{80} = .58 = 58\%$

d) What is the marginal probability of picking a student who rides a bike? $\frac{69}{221} = .31 = 31\%$

6) The number of cookies found in 10 different snack bags are shown below:

14, 12, 14, 13, 14, 14, 14, 13, 14, 12

a) How do we measure central tendency?

mean/median

Find the measures of central tendency for the data above.

mean = 13.6

median = 14

b) How do we measure variability?

Range/IQR

Find the measure of variability for the data above.

range = 15 - 12 = 3

$IQR = Q3 - Q1 = 14 - 13 = 1$

7) Students in Ms. Graham's Algebra II class wanted to see if there are correlations between test scores and time spent watching television. The students created a table in which they recorded 13 student's average number of hours per week spent watching television and scores on a test. Use the actual data collected by the students in Ms. Graham's class, as shown in the table below, to answer the following questions.

TV hrs/week (average)	30	12	30	20	10	20	15	12	15	11	16	20	19
Test Scores	60	80	65	85	100	78	75	95	75	90	90	80	75

a) Find the best fitting linear model that represents the data, the correlations coefficient, and the type of correlation.

b) Identify the y-intercept. What does it represent in the context of the problem?

c) Using this model, what is the estimated test score of a student who watches TV for 35 hours?

d) Using this model, what is the highest number of hours a student can watch TV and still pass the test (make a 70)?

8) A rapidly growing bacterium has been discovered. The data in the following chart represents the number of bacteria in a sample each hour.

a) Write the linear model that represents the data, the correlation coefficient, and the type of correlation. $y = mx + b$

$r = 0.92$ $y = ax + b$

$y = 94.2x + -53.4$

Hours	Bacteria Present
0	20
1	40
2	75
3	150
4	297
5	510

b) Using the best fitting model, how much bacteria is present after 10 hours?

$y = 94.2(10) - 53.4$

$y = 888.6$

c) Using the best fitting model, how much bacteria is present after one day?

$\overline{24\ hr}$

$y = 2207.4$

3

Questions - Random	Practice - 10 Questions Create Equations	0/13	- Options - ▼	⊗
Performance Task	Practice - Performance Task	0/13	- Options - ▼	⊗
Questions - Random	Practice - 10 Questions Graph Equations	0/13	- Options - ▼	⊗
Vocab - Random	Practice - 5 Vocab Graph Equations	0/13	- Options - ▼	⊗
Questions - Free Response	Practice - Free Response Graph Equations	0/13	- Options - ▼	⊗
Questions - Free Response	Practice - Free Response Graph Equations	0/13	- Options - ▼	⊗
Questions - Random	Practice - 10 Questions System Of Equations	0/13	- Options - ▼	⊗
Performance Task	Practice - Performance Task	0/13	- Options - ▼	⊗
Questions - Random	Practice - 10 Questions Solve Systems	0/13	- Options - ▼	⊗
Questions - Random	Practice - 10 Questions Rearrange Formulas	0/13	- Options - ▼	⊗
Questions - Free Response	Practice - Free Response Rearrange Formulas	0/13	- Options - ▼	⊗
Questions - Free Response	Practice - Free Response	0/13	- Options - ▼	⊗

you should have at least 3 of these tasks complete by the end of class.

4

9) Jerry, a barista at Starbucks, recorded his sales when he's on the clock. Each week, Jerry calculated the total revenue for all of his sales. The graph is a scatter plot from the given data.

   a. Determine if the correlation is positive, negative, or none.

   b. Estimate the correlation coefficient.

   c. Is there causation? Why or why not?
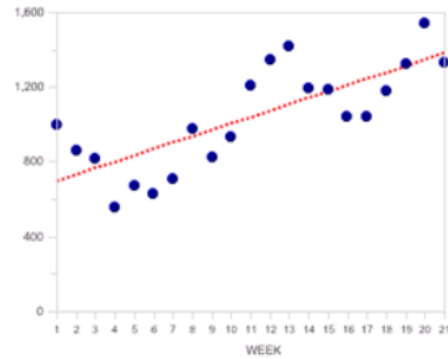
4. Theresa started making homemade cards to send to friends and family and to sell at the local craft fair. The scatter plot shows how many cards Theresa made each hour she worked. Use a trend line to estimate the number of cards Theresa can make in 14 hours.

   A. 14
   B. 10
   C. 70
   D. 41
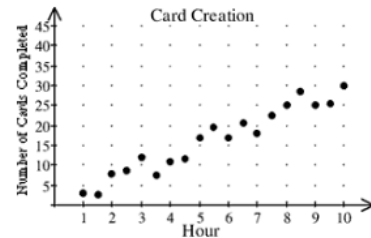
5. The correlation coefficient of lines of best fit is given below. Which correlation coefficient best represents the graph in question 4?

      A. 0.0957624871
      B. 0.9760864904
      C. −0.0957624871
      D. −0.9760964904

6. The table shows Janice's best javelin throws each year. Find an equation for the line of best fit for the data. What is the value of the correlation coefficient r for the data?

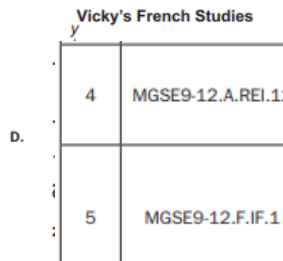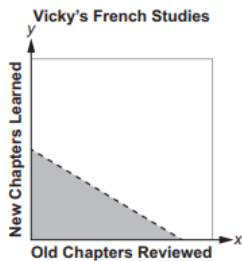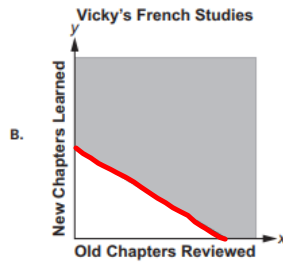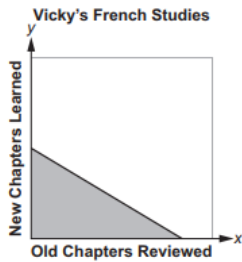| Year	1989	1990	1991	1992	1993	1994	1995	1996
Distance (m)	31.9	31.55	34.45	31.6	34	36.15	35.05	38.7

April 23, 2019, Tuesday

input only one output

Item 4

Selected-Response

Vicky is studying French. She spends 1 hour reviewing each old chapter. She also spends 1.5 hours learning each new chapter. She spends at least 10 hours per week studying French. Which graph could represent the possible number of old chapters Vicky reviews, x, and new chapters Vicky learns, y, each week?

Vicky's French Studies

A. New Chapters Learned / Old Chapters Reviewed

Vicky's French Studies

B. New Chapters Learned / Old Chapters Reviewed

Vicky's French Studies

C. New Chapters Learned / Old Chapters Reviewed

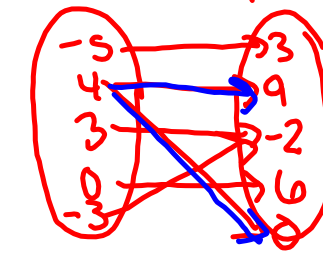**Vicky's French Studies**

D.

Item 5

Multi-Select Technology-Enhanced

The set of ordered pairs shown represents a function, f.

$$\{(-5, 3), (4, 9), (3, -2), (0, 6)\}$$

Select THREE ordered pairs that could be added to the set that would allow f to remain a function.

A. $(-3, -2)$
B. $(4, 0)$
C. $(0, -1)$
D. $(1, 6)$
E. $(2, 3)$
F. $(-5, 9)$

4	MGSE9-12.A.REI.12	2	B	The correct answer is choice (B). The graph is correct because the line is solid and the shading is above the line. Choices (A), (C), and (D) represent confusion over which inequality symbol to assign.
5	MGSE9-12.F.IF.1	2	A/D/E	The correct answers are choices (A), (D), and (E). Choices (B), (C), and (F) are incorrect because each has the same x-value as an ordered pair already in the function. If any of these values were added, the set would no longer represent a function because there would be one x-value with two different y-values.

Math Task ~ Comparing Data Sets   Name _____

Ms. Graham has two Algebra 1 classes. When teaching Unit 6, she lectured and practiced with each class. Each class was given homework assignments to complete for practice throughout the lesson sequence. In the middle of Unit 6, the students were given a test. Ms. Graham recorded the test and homework grades for both classes. She divided the students into two groups to determine if completing the homework assignments impacted student performance on the test. Group 1 were students who completed all their homework assignments before the test. Group 2 were students who did not complete any of their homework assignments before the test.

Group 1: 84, 57, 75, 93, 88, 84, ~~78, 100, 91, 94, 88, 45, 88, 74, 50, 88, 96, 100, 78, 90~~

Group 2: 70, 52, 70, 82, 70, 52, 62, 67, 60, 86, 65, 49, 77, 71, 70, 78, 75, 71, 62

1. Analyze her students' grades by calculating the mean and five statistical summaries of **both** groups.

	Group 1 Completed HW	Group 2 Did not complete HW
Mean	80.2	68.8
Median	84	70
Minimum	57	52
Maximum	93	82
Range	36	30
First Quartile	75	70
Third Quartile	88	70
Interquartile Range	13	0

(handwritten: measure of central tendencies — bracketing Mean, Median)

(handwritten: variability — bracketing Range through Interquartile Range)
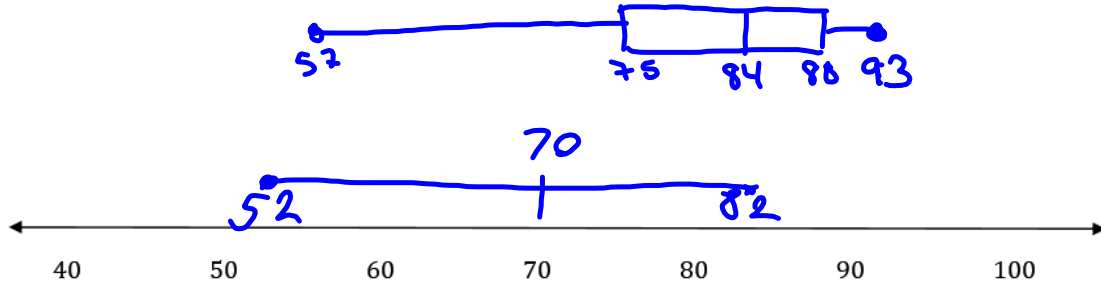
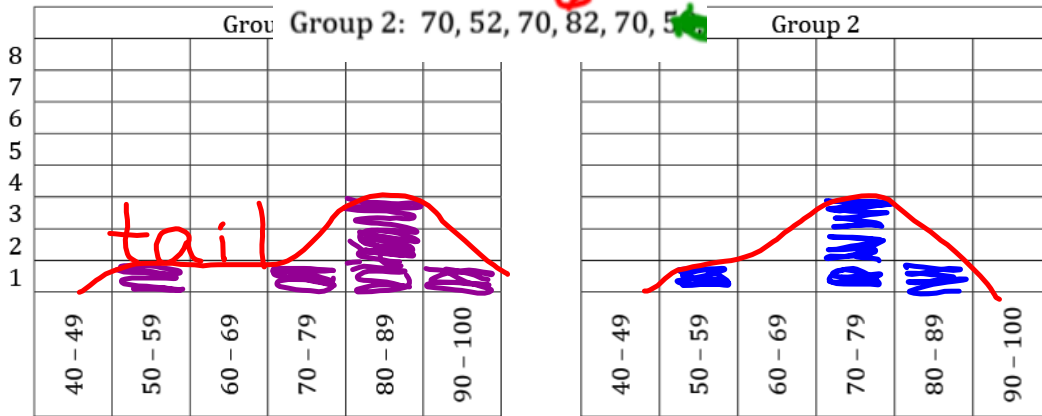2. Compare the two groups of students. Discuss topics such as:

a. Who has the higher mean and what does this tell us about the data? *Group 1 Higher test score if students complete homework.*

b. Who has the higher median and what does this tell us about the data? *Group 1*

c. Who has the larger interquartile range and what does this tell us about the data? *Group 1 their data is more spread out*

d. Which group is more variable? *Group 1*

e. Which group has a higher measure of central tendency? *Group 1*

	Group 1 Completed HW	Group 2 Did not complete HW
Mean	80.2	68.8
Median	84	70
Minimum	57	52
Maximum	93	82
Range	36	30
First Quartile	75	70
Third Quartile	88	70
Interquartile Range	13	0

3. Create a box plot for **both** sets of data. Use only one number line _ _ _ _ _ up 2.

57   75   84   88 93

70

52   82

```
40        50        60        70        80        90        100
```

4. Create a histogram for **both** Group 1: 84, 57, 75, 93, 88, 84, ed on their own graph.

Group 2: 70, 52, 70, 82, 70, 5

Group 1   Group 2

tail

```
8
7
6
5
4
3
2
1
   40-49  50-59  60-69  70-79  80-89  90-100     40-49  50-59  60-69  70-79  80-89  90-100
```

5. Compare and contrast the box plots and the histograms for each class.

   a. Which graph has a ~~close to~~ normal curve (bell shape)?

   Group 2

   b. Which has a skewed curve? Explain.

   Group 1 skewed to left

Performance Task	Practice - Performance Task	1/13	- Options - ▾	⊗
Questions - Random	Practice - 10 Questions Solve Systems	0/13	- Options - ▾	⊗
Questions - Random	Practice - 10 Questions Rearrange Formulas	0/13	- Options - ▾	⊗
Questions - Free Response	Practice - Free Response Rearrange Formulas	0/13	- Options - ▾	⊗
Questions - Free Response	Practice - Free Response Rearrange Formulas	0/13	- Options - ▾	⊗
Questions - Free Response	Practice - Free Response Rearrange Formulas	0/13	- Options - ▾	⊗
Questions - Random	Practice - 10 Questions Understand Graphs	0/13	- Options - ▾	⊗
Vocab - Random	Practice - 5 Vocab Understand Graphs	0/13	- Options - ▾	⊗
Crossword Puzzle	Practice - Crossword Understand Graphs	0/13	- Options - ▾	⊗
Questions - Random	Practice - 10 Questions Graph Solutions	0/13	- Options - ▾	⊗
Vocab - Random	Practice - 5 Vocab Graph Solutions	0/13	- Options - ▾	⊗

you should have at least 3 of these tasks complete by the end of class.

April 24, 2019, Wednesday

2. The graph shows the height, y, in meters, of a rocket above sea level in terms of the time, t, in seconds, since it was launched. The rocket landed at sea level.
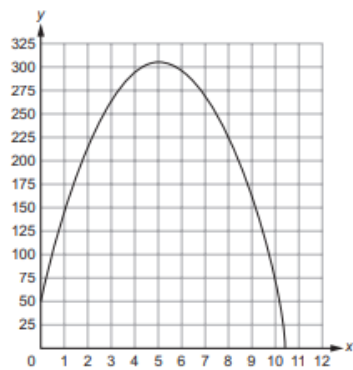
What does the x-intercept represent in this situation?

A. the height from which the rocket was launched
B. the time it took the rocket to return to sea level
C. the total distance the rocket flew while it was in flight
D. the time it took the rocket to reach the highest point in its flight

Answers to Unit 5
1. D   2. B

Algebra 1 ~ U6 Day 5   Unit 6 Quiz   Version A   Name _____

1) The value of a car decreases over time. Bethany buys a car for $18,000. Each year, she determines how much her car is worth. She records the value of her car each year in the table below. Use the data to answer the questions that follow.

Year	1	2	3	4	5	6	7
Value of Car (in thousands $)	18	16	14.5	13.2	12	11	10

(handwritten) 9

(handwritten table)
1	18
2	16
3	etc

a) Find the linear regression for the data.

(handwritten) $ax+b$

$y = \underline{-1.3x + 18.7}$

b) Estimate the value of the car after 9 years.

(handwritten) $y = -1.3(9) + 18.7 = 7$

2) Describe the type of correlation.
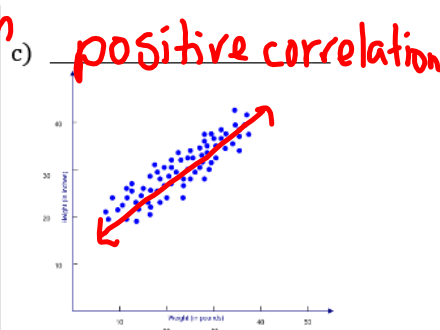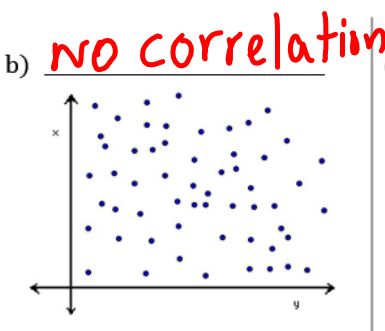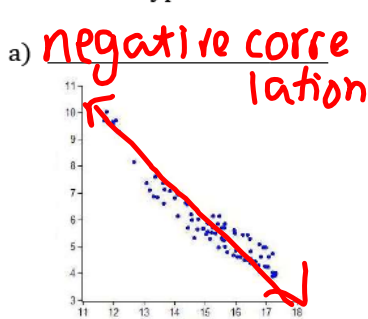
a) *(handwritten)* negative correlation

b) *(handwritten)* no correlation

c) *(handwritten)* positive correlation

3) Determine if the following situations represent a **positive, a negative, or no correlation**.

a) Number of hours studying for the SAT and your score. *(handwritten)* positive

b) The distance you drive and the number of stars in the sky. *(handwritten)* No correlation

c) A person's age and the hair on their head. *(handwritten)* negative
   (handwritten) 70-80

4. Tell whether the following situations are causation (answer **yes or no**).

a) The number of boats on Lake Allatoona and the number of cars on the street _____ *(handwritten)* No

b) The hours you work and the money you make (you get paid hourly) _____ *(handwritten)* yes

5. The data below shows the minimum wage requirement in years, x, after 1960. Based on the data, what would be the best linear model using your calculator's regression model?

Year	1	4	7	9	15	16	18	19	21	32	38
Minimum Wage	$1.00	$1.25	$1.50	$1.60	$2.10	$2.30	$2.65	$2.90	$3.35	$4.25	$5.15

a) $y = 0.110x + 1.327$

b) $y = 0.112x + 0.888$

c) $y = 0.114x + 0.691$ *(circled)*

d) $y = 0.115x + 0.644$

Multiple Choice

6) What is the median of the data set used to create the box plot below?
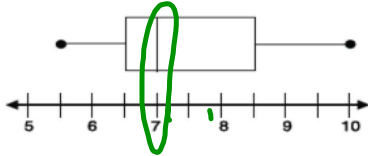
a. 5.5

b. 6.5

c. 7

d. 8.5

7) Once a day for seven days, Melanie recorded the temperature (in °F) of a stream near her home. Which box plot correctly shows Melanie's data?

| Temp (in °F) | 50 | 42 | 31 | 62 | 51 | 55 | 45 |

e.

b.

c.

d.

31 42 45 50 51 55 62

8) What is the **BEST** description for the histogram distribution?

a. bimodal ✓

b. uniform

c. multiple outlier
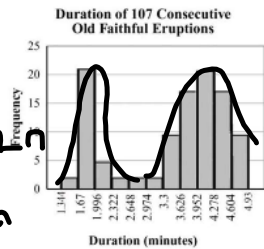
d. skew right

Duration of 107 Consecutive Old Faithful Eruptions

9) A reading teacher recorded the number of pages read in an hour by each of her students. The numbers are shown below.

44, 49, 39, 43, 50, 44, 45, 49, 51

For this data, which summary statistic is **NOT** correct?

a. The minimum is 39.

b. The lower quartile is 44

c. The median is 45.

d. The maximum is 51.

39 43 44 (45) 49 49 50 51

10) Complete the frequency table.

Based on the table above, answer the following questions:

	Football	Basketball	Baseball	Total
9th	22	40	50	112
10th	20	28	40	98
Total	42	68	90	200

a. What is the probability of choosing a 10th grader who prefers Basketball (joint frequency)?

$\frac{28}{88}$

b. What is the probability of randomly choosing a 9th grader?

$\frac{112}{200}$

c. Out of the students who prefer baseball, what **percentage** is in the 10th grade?

$\frac{28}{88}$ $\frac{40}{88} = 45\%$

d. What is the **marginal probability** of picking students who prefers Basketball?

$\frac{68}{200} = 34\%$

Questions - Random	Practice - 10 Questions Use Units	2/13	- Options - ▼
Questions - Random	Practice - 10 Questions Linear Equations	1/13	- Options - ▼
Vocab - Random	Practice - 5 Vocab Linear Equations	1/13	- Options - ▼
Questions - Free Response	Practice - Free Response Linear Equations	0/13	- Options - ▼
Questions - Free Response	Practice - Free Response Linear Equations	0/13	- Options - ▼
Questions - Free Response	Practice - Free Response Linear Equations	0/13	- Options - ▼
Questions - Random	Practice - 10 Questions Create Equations	0/13	- Options - ▼
Performance Task	Practice - Performance Task	1/13	- Options - ▼
Questions - Random	Practice - 10 Questions Graph Equations	0/13	- Options - ▼
Vocab - Random	Practice - 5 Vocab Graph Equations	1/13	- Options - ▼
Questions - Free Response	Practice - Free Response Graph Equations	0/13	- Options - ▼
Questions - Free Response	Practice - Free Response Graph Equations	0/13	- Options - ▼

you should have at least 3 of these tasks complete by the end of class.

Algebra 1 ~ U6 Day 5   Unit 6 Quiz   Version B   Name _____

1) The value of a car decreases over time. Bethany buys a car for $20,000. Each year, she determines how much her car is worth. She records the value of her car each year in the table below. Use the data to answer the questions that follow.

Year	1	2	3	4	5	6	7
Value of Car (in thousands $)	20	18	16.5	15.2	14	13	12

   a) Find the linear regression for the data.   y = _____

   b) Estimate the value of the car after 9 years.   _____

2) Describe the type of correlation.
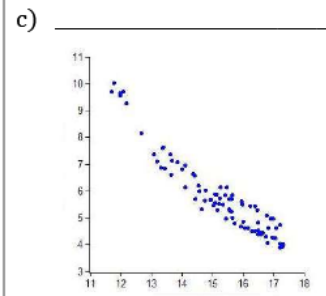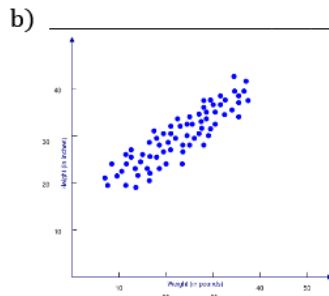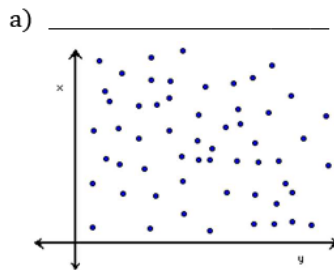
   a) _____   b) _____   c) _____

3) Determine if the following situations represent a **positive, a negative, or no correlation**.

   a) A person's age and the hair on their head. _____

   b) Number of hours studying for the SAT and your score. _____

   c) The distance you drive and the number of stars in the sky. _____

4. Tell whether the following situations are causation (answer **yes or no**).

   a) The hours you work and the money you make (you get paid hourly) _____

   b) The number of boats on Lake Allatoona and the number of cars on the street _____

5. The data below shows the minimum wage requirement in years, x, after 1960. Based on the data, what would be the best linear model using your calculator's regression model?

Year	1	4	7	9	15	16	18	19	21	32	38
Minimum Wage	$1.00	$1.25	$1.50	$1.60	$2.10	$2.30	$2.65	$2.90	$3.35	$4.25	$5.15

   a) $y = 0.115x + 0.644$

   b) $y = 0.110x + 1.327$

   c) $y = 0.112x + 0.888$

   d) $y = 0.114x + 0.691$

Multiple Choice

6) What is the quartile 3 of the data set used to create the box plot below?
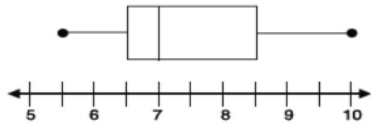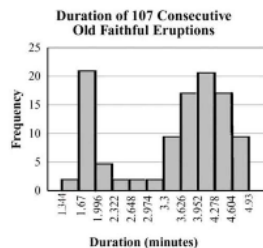

a. 5.5

b. 6.5

c. 7

d. 8.5

7) Once a day for seven days, Melanie recorded the temperature (in °F) of a stream near her home. Which box plot correctly shows Melanie's data?

Temperature (in °F)	50	42	31	62	51	55	45

a.

b.

c.

d.

8) What is the **BEST** description for the histogram distribution?

a. uniform

b. bimodal

c. multiple outlier

d. skew right

Duration of 107 Consecutive Old Faithful Eruptions

9) A reading teacher recorded the number of pages read in an hour by each of her students. The numbers are shown below.

44, 49, 39, 43, 50, 44, 45, 49, 51

For this data, which summary statistic is **NOT** correct?

a. The maximum is 51.

b. The minimum is 39.

c. The lower quartile is 44

d. The median is 45.

Constructed Response

10) Complete the frequency table.

Based on the table above, answer the following questions:

	Football	Basketball	Baseball	Total
9th	20		40	
10th		40	50	
Total	42	68		200

a. What is the probability of choosing a 10th grader who prefers Basketball (joint frequency)?

b. What is the probability of randomly choosing a 9th grader?

c. Out of the students who prefer baseball, what **percentage** is in the 10th grade?

d. What is the **marginal probability** of picking students who prefers Basketball?

Algebra 1 ~ U6 Day 6   Unit 6 Test Review   Name _____

Use the following to review for your test. Show your work for the problems on a separate sheet of paper as you need too.

What you need to know & be able to do	Things to remember	Problem	Problem
Identify the measures of central tendency.	• Mean • Median • Mode	**1.** 36, 39, 58, 42, 106, 39, 48, 45	**2.** 50, 55, 60, 58, 62, 57, 68, 51, 63
Identify the measures of spread (variability/ distribution).	• Q1 • Q3 • IQR • Minimum • Maximum • Range	**3.** (Use the same #s from 1)	**4.** (Use the same #s from 2)

Construct a box-and-whisker plot.	• First dot: Min
	• First Line: Q1
	• Middle Line: Median
	• Third Line: Q3
	• Last dot: Max
		5. Using the data from #1 & 2, construct a box and whisker plot.
		
		6. What percent of data lies between the following:
		  a. min & Q1 **b.** Q1 & Q3
		
		  c. median & Q3 **d.** min & max	

Determine if the situation has positive, negative, or no correlation and if there is causation.	• Positive: Both items are increasing/decreasing • Negative: one item increases as the other decreases • No Correlation: No relationship • Causation: One item causes the other.	**7.** Practicing Free Throws vs. Free Throw Percentage **9.** Weight vs. Amount of Exercise	**8.** Colors of the Sky vs. Time of Day **10.** Number of Followers on Twitter vs. Number of Friends on Facebook

Find the line of best fit.	• $y = ax + b$ • r = correlation coefficient (if close to 0 bad fit; if close to 1 or -1 good fit.)	**11.** Determine the line of best fit, correlation coefficient, and type of correlation. Is this a good line of fit for the data? | Price	4.00	5.50	3.50	8.00	5.50	7.00
# of Sandwiches	68	55	85	22	64	28	
---	---	---
Construct a two-way frequency table.	• Joint Probability: Individual Cell/Table Total • Marginal Probability: Row or Column Total/ Table Total • Conditional Probability: Individual Cell/Row or Column Total	Complete the table to answer the following questions. |	Math	Social Studies	PE	Total
---	---	---	---	---
9th Graders	50		40	
10th Graders		20	50	
Total	72	38		200	 **12.** How many 9th graders like Social Studies? **13.** What percentage of 10th graders like PE? **14.** Given that a student likes math, what is the probability they are in the freshman class?
Correlation Coefficient	• r = correlation coefficient (if close to 0 bad fit; if close to 1 or -1 good fit.)	**16.** According to the given correlation coefficient, describe the linear association of two variables as positive, negative, strong, weak, or no correlation (use at least two words). a. $r = -0.992$ _____ b. $r = 0.289$ _____ c. $r = 0.865$ _____
Shape of distribution	• Normal (bell curve) • Bimodal (2 peaks) • Skewed left (tail on left) • Skewed right (tail on right)	**17.** Draw an example of each distribution shape.

April 25, 2019, Thursday

Item 7

Constructed-Response

It takes Matt *m* months to save $1,000.

Part A   Write an equation that models the average number of dollars, *x*, Matt saves each month.
Write your answer in the space provided.

Part B   Matt takes 20 months to save $1,000. Explain how you could use your equation from Part A
to find the average number of dollars Matt saves each month. Write your answer in the space
provided.

Part A _____

Part B   _____
                 _____
                 _____
                 _____
                 _____
                 _____
                 _____
                 _____

Points	
2	The res • The ineq • The • The • Matl logic
1	The res • The ineq • The inco • The only • Matl
0	The res • The ineq • The • The • Matl limit

April 26, 2019, Friday

2. Which BEST describes the correlation of the two variables shown in the scatter plot?
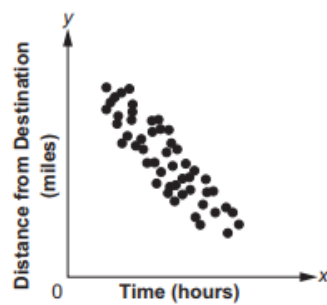
A. weak positive
B. strong positive
C. weak negative
D. strong negative

4. To rent a carpet cleaner at the hardware store, there is a set fee and an hourly rate. The rental cost, c, can be determined using this equation when the carpet cleaner is rented for h hours.

$$c = 25 + 3h$$

Which of these is the hourly rate?

A. 3
B. 3h
C. 25
D. 25h

Answers to Unit 6.3 Sample Items
1. C   2. D   3. D   4. A