1. A line of best fit must meet the following conditions:
	1. It matches the overall \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and direction of the data.
	2. It has approximately the same number of points \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the line as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the line.
	3. Draw a line of best fit for the following scatterplots:

**For questions 2-7, determine whether the statement is TRUE or FALSE.**

1. \_\_\_\_\_\_ A scatterplot can be used to display correlation.
2. \_\_\_\_\_\_ The term correlation refers to how two variables vary independently of one another.
3. \_\_\_\_\_\_ When there is no pattern among the X and Y values, a negative correlation will result.
4. \_\_\_\_\_\_ The strength of a correlation depends on its sign, positive or negative.
5. \_\_\_\_\_\_ Correlation is the same thing as causation.
6. \_\_\_\_\_\_ A correlation value of r = -.9 is not as strong as a value of r = .5
7. Calculate the slope of the following:
	1. ( 6, 17) ( -2, 41) b. ( -8, 7) ( 2, 1) c. ( 9, 10) ( 9, 16) d. ( 5, -15) ( 6, -15)

1. The table shows the average price of a movie ticket for the year listed. Find the rate of change for each time interval (in unit rate). Round your answers appropriately
	1. 1987-1999 \_\_\_\_\_\_\_\_\_\_\_\_\_\_ 1999-2003 \_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2003-2007 \_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2007-2009 \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Which interval had the greatest rate of change? \_\_\_\_\_\_\_\_\_\_\_\_
	3. What was the overall average rate of change? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



1. The graph shows the relationship between the height of a ramp and the length of a ramp. Find the slope of the line and explain what it means in the context of the problem.

1. Identify the slope and y-intercept, then write the equation of the line shown in the graph in slope intercept form

 ( ).

 a) b)

 slope: \_\_\_\_\_ slope: \_\_\_\_\_\_

 y-intercept:\_\_\_\_\_ y-intercept:\_\_\_\_\_

 Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Maria works as a sales person. She makes a base salary of $850 a month plus 3% (.03) commission on anything she sells. Write a **function** in slope-intercept form to model Maria’s total monthly pay,  , in terms of the amount she sells,.
2. Mrs. Fuddy-Duddy doesn’t text a lot, so she decided to purchase a cellphone plan where she pays $0.10 per text message. She also has to pay $30 a month for minutes and data. Her monthly bill can be modeled by the function , where  represents the number of text messages she uses and  represents the total monthly cost.

**a)** Use the model to determine how much her bill would be if she sends only 234 text messages.

**b)** Use the model to determine how many text messages Fuddy-Duddy can send if she can spend $75 a month.

1. The relationship between the fat grams, , and the total calories,  , in fast food as shown in the table at right can be modeled with the equation

$$c(g)=11.73g+193.85$$

* 1. What is the slope? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. What does the slope represent in the context of the problem?
	3. What is the y-intercept? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. What does the y-intercept represent in the context of the problem?
	5. The correlation coefficient for the model is $r= .93$. Explain what this means about the strength of the correlation between the two variables.

**Algebra 1-2 Unit 3 Test Study Guide Scoring Rubric**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Q # | Answer | Scoring | Points | Score |
| 1 | a – shapeb – above, below Image result for scatter plotc-  | a. 1pointb. 1 point each wordc. 1 point each line of best fit correctly drawn with shape and location appropriate (and none on last graph since no correlation) | 7 |  |
| 2-7 | 2) T 3) F 4) F 5) F 6) F 7) F | ½ point each | 3 |  |
| 8.  | a. m= -3b. m=$\frac{-3}{ 5}$c. m= Undefinedd. m= 0 | 1 point each | 4 |  |
| 9. | 1987 - 1999 : $ 0.10 per year1999-2003: $ 0.24 per year2003 – 2007: $ 0.21 per year2007 – 2009: $ 0.31 per year | Half credit for sign errors, etc. No credit for having fractions reversed | 4 |  |
| b. The 2007 – 2009 time period had the greatest ROC | Grade parts b and c relative to your calculations in part a. | 1 |  |
| c. Average ROC = $ 0.16 per year (round from 0.163) | 1 |  |
| 10. | 1. 12
 | 1 point partial for correct fraction | 2 |  |
| 1. For every 1” increase in height, the ramp length increases by 12”
 | 1 point for increasing1 point for correct context | 2 |  |
| 11. | Line a: slope -3, y-intercept 1, equation y = -3x +1Line b: slope 2, y-intercept -1, equation y = 2x – 1  | 1 point for each item.Grade equations relative to answers to slope and intercept | 6 |  |
| 12.13. | 1. $ p(a)=.03a+850$
 | 1 point for slope; 1 for intercept | 2 |  |
| 1. $53.40
 | Grade relative to part a | 1 |  |
| 1. 450 text messages
 | Grade relative to part a; partial for setting up equation correctly | 2 |  |
| 14. | 1. 11.73
 |  | 1 |  |
| 1. For each additional gram of fat, the calories increase by 11.73
 | Grade relative to part a | 1 |  |
| 1. 193.85
 |  | 1 |  |
| 1. The amount of calories with zero fat grams
 | Grade relative to part a | 1 |  |
| e) \*The r-value is positive, so as fat increases, so do calories \* .93 is close to 1 (perfect correlation), so it is a strong positive relationship | 1 point1 point | 2 |  |
| ***Total Points*** | ***41*** |  |