Regression, Correlation Quiz A Name_____

1. The table below indicate the amount of money (in millions of dollars) that 10 different categories of businesses spent on network and cable television advertising during 2004.

Television Advertising Expenditures 2004 in millions of dollars

Category	Network	Cable
Retail	2818	488
Financial Services	2218	350
Movies, Recorded Video and Music	2467	382
Airlines, Hotel, Car Rental, Travel	1117	100
Restaurants	2229	295
Apparel	1048	52
Insurance	1224	145
Pet Food and Pet Care	952	105
Office Equipment	882	82
Automotive	3905	300

a. Use your **calculator to find the regression equation** for the data. **Write down the equation** and **the correlation**. **Round** all decimals to the **nearest hundredth**.

Equation:_____ Correlation:_____

b. **What does the correlation** tell you about the relationship between the amount of money (in millions of dollars) spent on network and cable television advertising during 2004. Make sure you include **direction, and strength**.

c. What is the slope of the regression line? _____ Explain the meaning of the slope in terms of the amount of money (in millions of dollars) spend on network and cable television advertising during 2004.

_____

d. Assuming that a business **paid a network 700 million** dollars advertising for electronics, **how much would they have paid the local cable provider**? Use your regression line and your calculator to help you determine your answer.

2. Use your calculator to **find the residuals**. Provide them in the list below.

Television Advertising Expenditures 2004 in millions of dollars

Category	Network	Cable	Residuals
Retail	2818	488	
Financial Services	2218	350	
Movies, Recorded Video and Music	2467	382	
Airlines, Hotel, Car Rental, Travel	1117	100	
Restaurants	2229	295	
Apparel	1048	52	
Insurance	1224	145	
Pet Food and Pet Care	952	105	
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Automotive	3905	300	

a. Which category had the **largest positive residual**?_____

Interpret this residual for this category _____

_____

b. Which category had the **largest negative residual**?_____

Interpret this residual for this category _____

_____

c. Which category had the **smallest positive residual**?_____

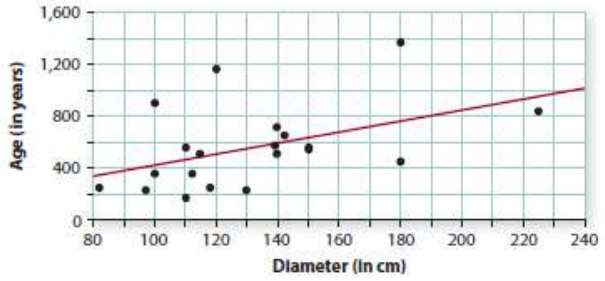
Interpret this residual for this category _____

_____

d. Which category had the **smallest negative residual**?_____

Interpret this residual for this category _____

_____



3. The age of a tree can often be determined by counting rings. The results appear in the scatterplot.

a. For which tree diameter is the residual the largest.

b. Estimate the value of the residual using the scatter plot. Explain what your answer means.

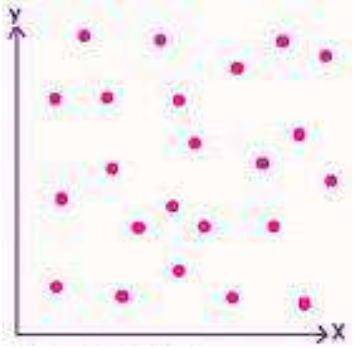
c. How many of the data points have a positive residual? Explain your answer.

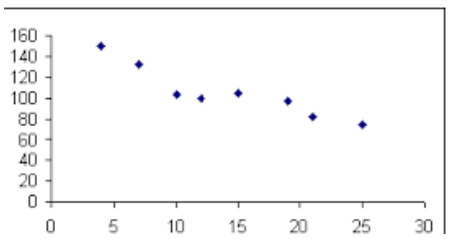
d. How many of the data points have a negative residual? Explain your answer.

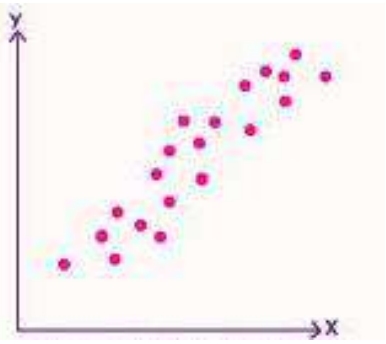
e. Are there any data points that have a residual close to zero? Explain your answer.

4. Match the correct approximate correlation to each plot

I. $r = 0.50$ **II.** $r = -0.90$ **III.** $r = 0.80$ **IV.** $r = 0.10$ **V.** $r = -1.5$







a. r = **b. r =** **c. r =**

The table below indicate the amount of money (in millions of dollars) that 10 different categories of businesses spent on network and cable television advertising during 2004.

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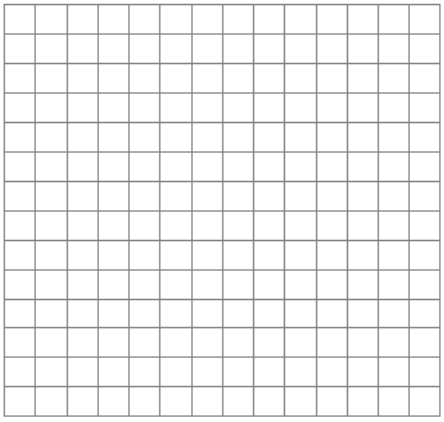
a. **Plot** the data on the graph given and draw the line of best fit.



b. **Find the line of best fit** for the data using the point slope equation ($y - y_1 = m(x - x_1)$). Then convert that into slope intercept form ($y = mx + b$)

c. Using your answer from part b, Determine the amount of money spent on cable advertising if 2**000 million dollars is spent on network advertising.**