

Review for Quiz #9 - Statistics

Name _____ Class _____

1.) What does bivariate mean?

2 variables

2.) What is the difference between quantitative or categorical/qualitative?

Quantitative represents numerical data

and qualitative/categorical represents data based on descriptions

3.) What kind of data is represented in a two-way table? categorical/qualitative

4.) What is the difference between interpolation and extrapolation?

interpolation predicts within the data and

extrapolation predicts outside the data

5.) A group of people looked at nutritional facts for a fast food restaurant and wanted to compare the number grams of fat in an item (x) to the number of calories in an item (y). The equation of the line of best fit turned out to be $y = 12x + 194$.

a.) What is the slope of this line?

12

b.) Explain what the slope represents in this context.

$$m = \frac{\Delta y}{\Delta x} = \frac{12 \text{ calories}}{1 \text{ g}}$$

12 calories per gram

c.) If an item has 22 grams of fat, predict how many calories there are.

$$y = 12(22) + 194$$

$$y = 264 + 194$$

$$y = \boxed{458 \text{ calories}}$$

6.) If you were to compare the number of workers at a game factory (x) to the number of items produced daily (y), the equation of the line of best fit is $y = 7x$.

a.) What is the y -intercept of this line? 0 Explain what it represents in this context.

At the beginning (when there were no workers at the factory), 0 items were produced.

b.) What is the slope of this line? 7 Explain what it represents in this context.

$$m = \frac{\Delta y}{\Delta x} = \frac{7 \text{ items}}{1 \text{ worker}}$$

Each worker produces 7 items

c.) If a factory has 125 workers, how many items would you expect to be produced that day?

$$y = 7x \rightarrow y = 7(125) = \boxed{875 \text{ items}}$$

d.) If a factory produced 1,036 items that day, how many factory workers were there?

$$\begin{aligned} y &= 7x \\ 1036 &= 7x \\ \frac{1036}{7} &= \frac{7x}{7} \end{aligned}$$

$$\boxed{x = 148 \text{ workers}}$$

7.) The scatterplot below gives the percent of adults, y percent, that get their news from newspapers compared to television or online during x years since 1990.

a.) Find the equation of the line of best fit.

$(8, 61.6)$ and $(16, 56.8)$

$$m = \frac{56.8 - 61.6}{16 - 8} = \frac{-4.8}{8} = -0.6$$

$$y = -0.6x + b$$

$$56.8 = -0.6(16) + b \rightarrow 56.8 = -9.6 + b$$

$$66.4 = b$$

$$y = -0.6x + 66.4$$

b.) Using your equation, estimate the percent of adults that got their news from newspapers in the year 2010. Is this interpolation or extrapolation?

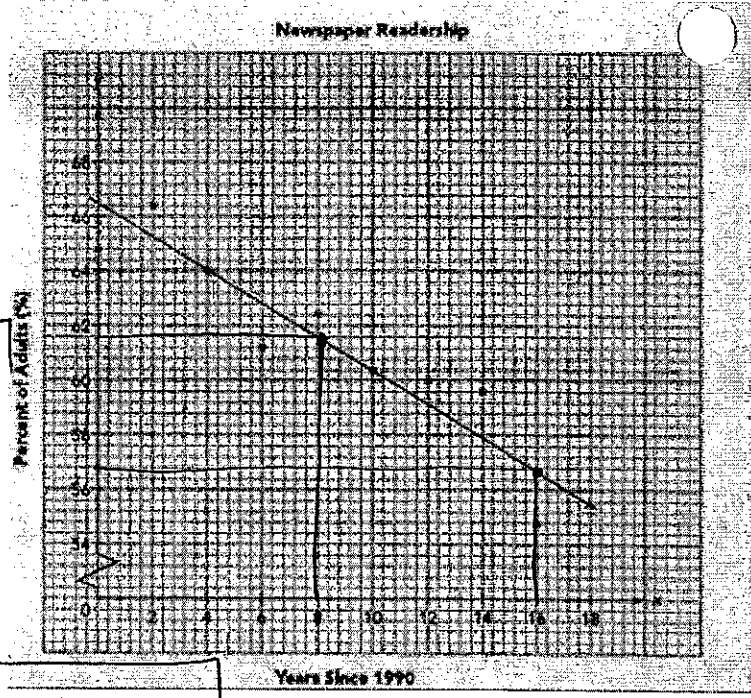
$x = 20$

$$y = -0.6(20) + 66.4$$

$$y = -12 + 66.4$$

$$y = 54.4\%$$

extrapolation



8.) Given the tables of relative frequencies below (the results of a poll of 100 adults about their favorite sport), answer the following questions.

		Favorite Sport			
		Basketball	Baseball	Tennis	Swimming
Gender	Men	$\frac{16}{18} \approx 0.89$	$\frac{27}{33} \approx 0.82$	$\frac{5}{21} \approx 0.24$	$\frac{12}{28} \approx 0.43$
	Women	$\frac{2}{18} \approx 0.11$	$\frac{5}{33} \approx 0.18$	$\frac{16}{21} \approx 0.76$	$\frac{16}{28} \approx 0.57$
	Total	1	1	1	1

out of fav. sport

		Favorite Sport				Total
		Basketball	Baseball	Tennis	Swimming	
Gender	Men	$\frac{16}{60} \approx 0.27$	$\frac{27}{60} \approx 0.45$	$\frac{5}{60} \approx 0.08$	$\frac{12}{60} \approx 0.20$	1
	Women	$\frac{2}{40} \approx 0.05$	$\frac{5}{40} \approx 0.15$	$\frac{16}{40} \approx 0.40$	$\frac{16}{40} \approx 0.40$	1

out of gender.

- a.) What percent of basketball players are men? 89%
- b.) What percent of swimmers are women? 57%
- c.) What percent of men like baseball? 27%
- d.) What percent of women like tennis? 40%

9.) A survey is conducted to find out if providing nutrition information on the menu affects whether patrons recommend the restaurant to others.

Nutritional Information	NP	NP	P	P	NP	NP	NP	P	P	NP
Customer Recommended	R	R	R	NR	R	R	R	R	R	R

P represents provide nutritional information
 NP represents do not provide nutritional information
 R represents recommend
 NR represents do not recommend

Nutritional Information	NP	P	NP	NP	P	NP	NP	P	P	NP
Customer Recommended	NR	R	R	NR	NR	R	NR	R	R	NR

a.) Construct a two-way table using the above data.

		Nutritional Info		
		yes	no	Total
Recommended	yes	6	8	14
	no	2	4	6
Total		8	12	20

b.) Are there greater or fewer people that are informed of the nutrition of food they eat?

fewer

c.) Find the relative frequencies among the rows, and interpret their meanings. Round to the nearest hundredth.

		Nutritional Info		
		yes	no	Total
Recommended	yes	$\frac{6}{14} \approx 0.43$	$\frac{8}{14} \approx 0.57$	$\frac{14}{14} = 1$
	no	$\frac{2}{6} \approx 0.33$	$\frac{4}{6} \approx 0.67$	$\frac{6}{6} = 1$

43% of recommended restaurants provided nutritional info and 57% did not.

33% of not recommended restaurants provided nutritional info and 67% did not.

d.) Find the relative frequencies among the columns, and interpret their meanings. Round to the nearest hundredth.

		Nutritional Info		
		yes	no	
Recommended	yes	$\frac{6}{8} = 0.75$	$\frac{8}{12} = 0.67$	
	no	$\frac{2}{8} = 0.25$	$\frac{4}{12} = 0.33$	
Total		$\frac{8}{8} = 1.00$	$\frac{12}{12} = 1.00$	

out of all the restaurants that provide nutritional info, 75% were recommended and 25% were not

out of all the restaurants that do not provide nutritional info 67% were recommended and 33% were not

e.) Would you recommend that restaurant owners provide nutrition information for the menu items to their customers? Explain.

There doesn't seem to be a relationship between the two

10.) Identify whether the given data is **categorical** or **quantitative**.

a.) Brown, green, blue

Categorical

b.) \$1, \$2, \$3, \$4

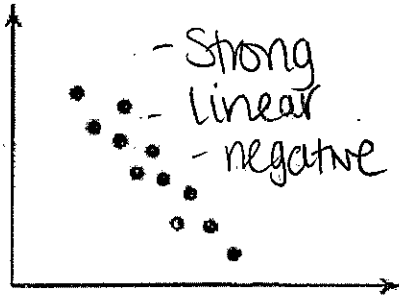
Quantitative

c.) 1 A.M., 2 A.M., 3 A.M.

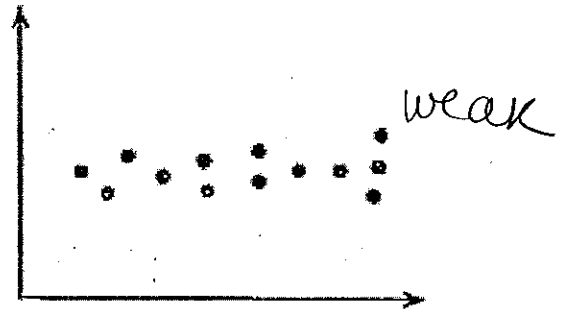
quantitative

11.) Describe the association between the bivariate data shown in each scatter plot.

a.)

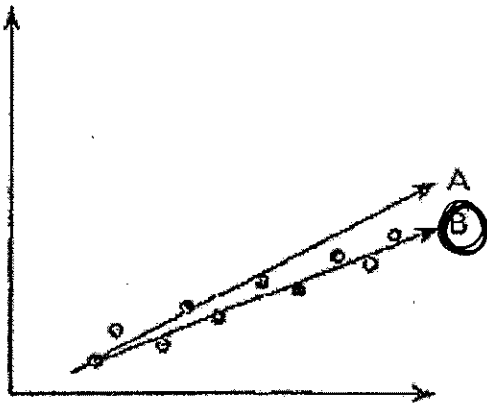


b.)

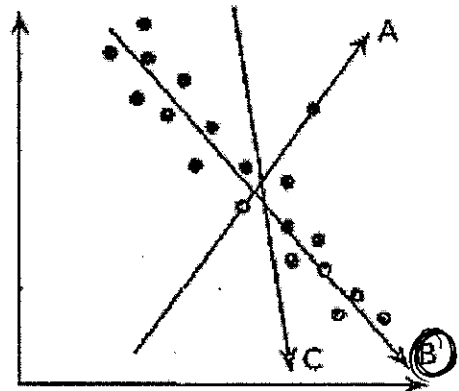


12.) State the line that represents the line of best fit for each scatter plot.

a.)

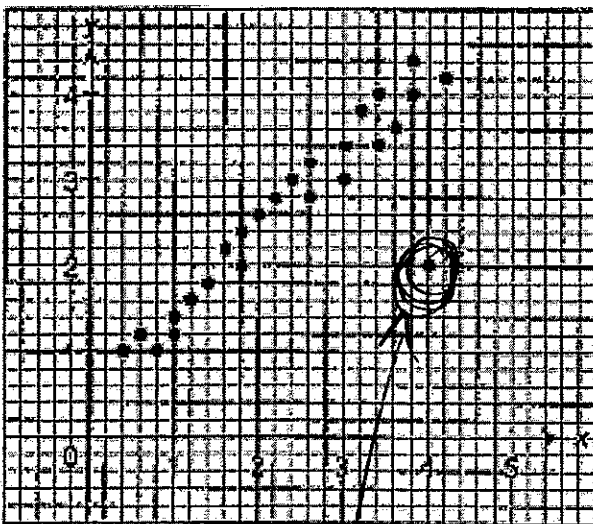


b.)



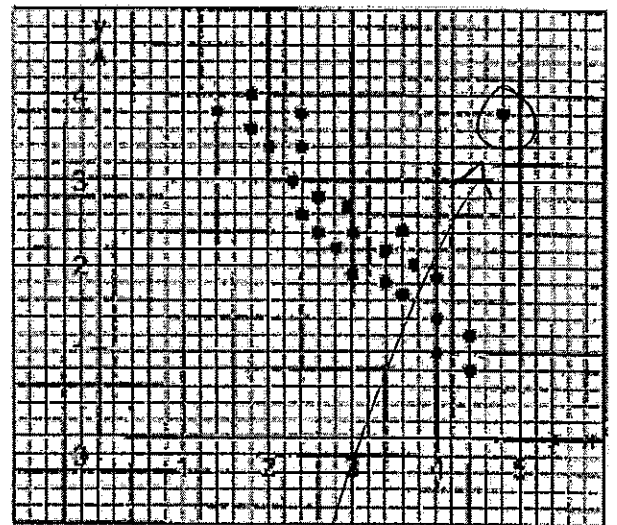
13.) Identify the outlier(s) in each scatter plot.

a.)



outlier

b.)



outlier