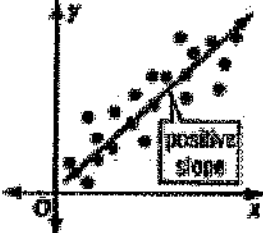

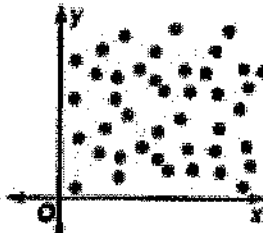


Measures of Central Tendency and Lines of Best Fit

Key Vocabulary

1. Scatter Plot: A graph that relates two sets of data. Used to determine whether there is a correlation between two variables.
2. Correlation: A measure of the strength of a relationship between two quantities.

3 Types of Correlation		
<u>Positive</u> Correlation	<u>Negative</u> Correlation	<u>No</u> Correlation
		
As one value increases, the other value also increases	As one value increases, the other value also decreases	There is no relationship between the two sets of data

3. Line of Best Fit: the line that most closely follows the trend in the data.

Mean, Median, Mode:

Ex: The ages, in years, of relatives staying at your home are listed below. 5, 14, 8, 2, 89, 14, 10, 2.

Mean: find the sum of the data then divide by the number of items in the set.

$$2 + 2 + 5 + 8 + 10 + 14 + 14 + 89 = \frac{144}{8} = 18$$

Median: Put the data in order from least to greatest, then find the middle number.

If there are two middle numbers, add them together and divide by 2.

$$8 + 10 \div 2 = 9$$

Mode: The number or numbers that occur most often. If no number occurs more than once, the data set has no mode.

$$2 \text{ \& } 14$$

Range: The difference between the largest value and the smallest value.

$$89 - 2 = 87$$

Measures of Central Tendency and Lines of Best Fit

1. The table shows the amount of viewers (in millions) per season of a television show.

a. Find the measures of central tendency for the data: (Show work)

i. Mean: $\frac{152.4}{6} = 25.4$

ii. Median: $(24.7 + 25) \div 2 = 24.85$

iii. Mode: None

iv. Range: $31.7 - 22.1 = 9.6$

Television Ratings	
Season	Viewers (millions)
1	31.7
2	26.3
3	25.0
4	24.7
5	22.6
6	22.1

22.1
22.6
24.7
25.0
26.3
31.7

b. Create a scatter plot of the data

c. Identify the correlation.

Negative

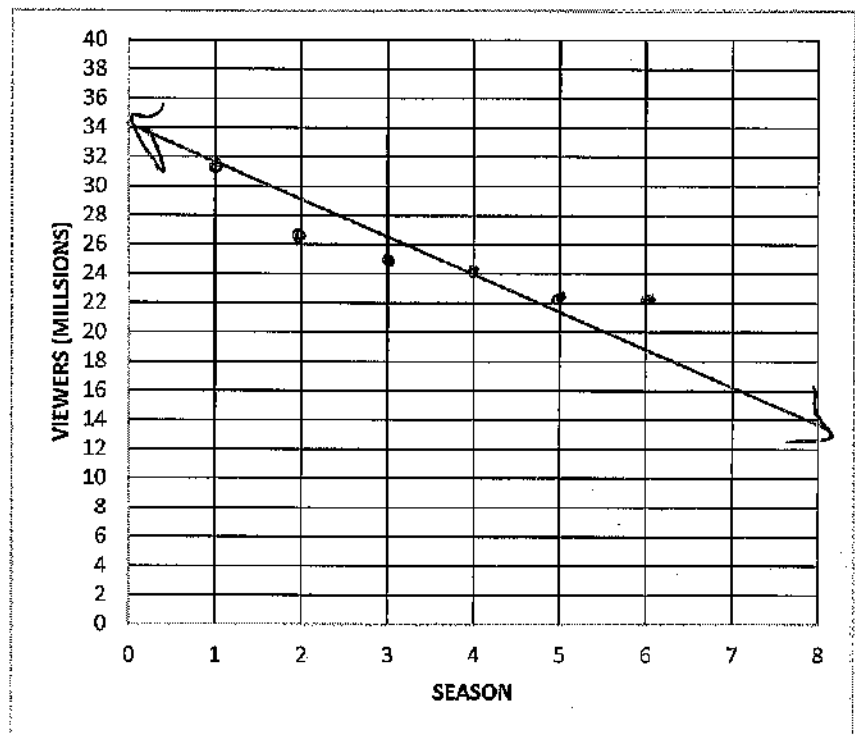
d. If a relationship exists, make a conjecture about the number of viewers for the 7th season.

lower than 22.1

e. If there is a correlation, find the line of best fit. (Show work)

Any combo that splits data.

$(1, 31.7)$ $(4, 24.7)$



$$m = \frac{24.7 - 31.7}{4 - 1} = \frac{-7}{3} \text{ or } -2.33$$

$$31.7 = -2.33(1) + b$$

$$+2.33$$

$$\hline 34.03 = b$$

$$y = -2.33x + 34.03$$

f. Use eqn to find # of viewers for Season 7.

Measures of Central Tendency and Lines of Best Fit

2. The table shows the number of books sold per year.

Year	1	2	3	4	5	6	7	8
Number of Books	27	38	24	47	58	65	63	68

a. Find the measures of central tendency for the data: (Show work)

i. Mean: $\frac{27 + 38 + 24 + 47 + 58 + 65 + 63 + 68}{8} = \frac{390}{8} = 48.75$

ii. Median: $\frac{47 + 58}{2} = 52.5$

iii. Mode: NONE

iv. Range: $68 - 24 = 44$

b. Create a scatter plot of the data

c. Identify the correlation.

Positive

d. If there is a correlation, find the line of best fit. (Show work)

$$m = \frac{63 - 38}{7 - 2} = \frac{25}{5} = 5$$

$$38 = 5(2) + b$$

$$-10$$

$$28 = b$$

$$y = 5x + 28$$

