

Unit 6 Describing Data Mock Test

Key

Mean, Median and Mode

1.

Justin and TJ are servers at a local restaurant. The table below shows the tips they earned.

Tips	Justin	T.J.
Monday	\$32	\$58
Tuesday	\$45	\$48
Wednesday	\$80	\$40
Thursday	\$33	\$42
Friday	\$50	\$42

Justin: 32, 33, 45, 50, 50

TJ: 40, 42, 42, 48, 58

Which student has a higher median tip for the week and by how much?

- a. Justin's median tip is \$4 more than TJ's median tip.
- b. TJ's median tip is \$4 more than Justin's median tip.
- c. Justin's median tip is \$3 more than TJ's median tip.
- d. TJ's median tip is \$3 more than Justin's median tip.

At a restaurant a manager recorded the sales for one of his servers named Damaria.

2.

~~\$52, \$60, \$48, \$52, \$46, \$52, \$28, \$192, \$71, \$59~~

28, 46, 48, 52, 52 | 52, 59, 60, 71, 192

Which center should be used to best represent the data?

Median
52

Both good answers, but median gives a better picture

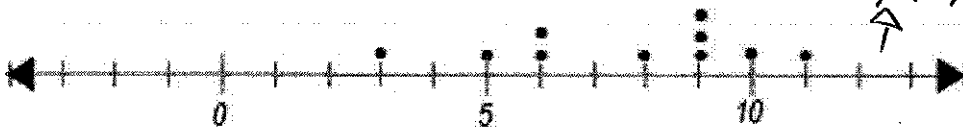
- ~~a. Damaria's mean sale is \$70 ← \$66, and 2 outliers (28 and 192)~~
- b. Damaria's median sale is \$52.
- ~~c. Damaria's mode sale is \$52~~
- ~~d. Damaria's range of her sales is \$164~~

Mean = \$66
Mode = \$52
Range = 192 - 28 = \$164

measure of variability

What is the mean of the following data set shown in the dot plot:

3.



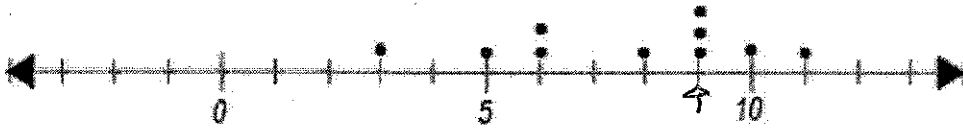
3, 5, 6, 6, 8, 9, 9, 9, 10, 11

- a. 7.6
- b. 8.5

- c. 9.5
- d. 9

4.

What is the mode of the following data set shown in the dot plot:



- a. 7.6
- b. 8.5

- c. 9.5
- d. 9

MAD (Mean Absolute Deviation)

Consider the data set:

5. 60, 44, 56, 52, 48

Data Points (x)	Mean (x̄)
60	8
44	8
56	4
52	0
48	4

$$8 + 8 + 4 + 0 + 4 = \frac{24}{5} = 4.8$$

What is the mean absolute deviation of the data set (use the table for help)?

- a. 0
 b. 4
 c. 4.8
 d. 8

6. Consider the data set:

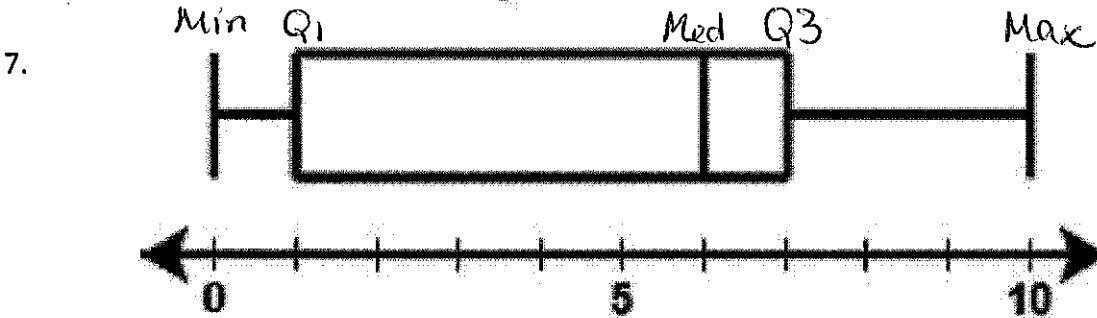
- 5, 9, 11, 17, 23

The data set has a mean deviation of 5.6. If you were to double every number in the data set and recalculate the mean deviation, what would it be?

- a. 5.6
 b. 7.6
 c. 11.2
 d. 12.1
- if you double all numbers, the spread of the data remains the same.*

Box and Whisker Plots

Consider the following Basic Box & Whisker Plot.



What is the Inner Quartile Range (IQR) of the data set shown in the graph?

- a. 0
 b. 1
 c. 6
 d. 10

$$IQR = Q3 - Q1$$

$$7 - 1 = 6$$

Outlier Formulas:

$$Q_1 - 1.5(IQR)$$

$$Q_3 + 1.5(IQR)$$

8.

20, 52, 86, 80, 44, 49, 57, 41, 44, 58

20, 41, 44, 44, 49 | 52, 55, 57, 80, 86
 Min Q1 Med Q3 Max
 50.5

$IQR = 57 - 44 = 13$
 $Q_1 - 1.5(13) = 9.5$
 $Q_3 + 1.5(13) = 76.5$
 Outliers:

↳ 80 and 86

9.

67, 71, 79, 65, 52, 71, 73, 94, 69

52, 65, 67, 69, 71, 73 | 76, 79, 94
 Min Q1 Med Q3 Max

$IQR = 76 - 66 = 10$
 $Q_1 - 1.5(10) = 51$
 $Q_3 + 1.5(10) = 91$

Outliers:

94

10.

Consider the following unorganized data set:

12, 15, 8, 29, 30, 27, 19, 12 8, 12 | 12, 15 | 19, 27 | 29, 30
 Min Q1 Med Q3 Max

What is the first quartile (Q₁) of the data set?

- a. 8
- b. 12
- c. 17
- d. 28

11.

Consider the following unorganized data set:

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

What is the Inner Quartile Range (IOR) of the data set?

- a. 12
- b. 16
- c. 17
- d. 28

$$Q_3 - Q_1 = 28 - 12 = 16$$

Frequency Table

12. Cameron surveys students in his school who play sports, and asks them which sport they prefer. He records the responses in the table below.

Gender	Preferred sport			
	Baseball	Soccer	Basketball	
Male	49	52	16	117
Female	23	64	33	120
	72	116	49	Total: 237

- a) What is the joint frequency of male students who prefer soccer? (How many male students prefer soccer?)

$$\frac{\text{point}}{\text{male total}} = \frac{52}{117} = 44\%$$

- b) What is the marginal frequency of each type of sport? (Total the number of males and females who played baseball. Then give total for the other two sports.)

Baseball

$$\frac{72}{237} = 30\%$$

Soccer

$$\frac{116}{237} = 49\%$$

Basketball

$$\frac{49}{237} = 21\%$$

13. The two-way table shows some information about the number of students in a school.

	Year Group			Total
	9	10	11	
Boys	149	133	125	407
Girls	154	123	147	424
Total	303	256	272	831

Complete the two-way table.

14. Elizabeth wanted to know the gender and the hair color of each of her classmates. She arranged the results of this survey into a two-way table, shown below.

- a. According to the table, what is the joint frequency of boys with red hair?

$$\frac{3}{10} = 30\%$$

- b. What is the marginal frequency of blonde hair?

$$\frac{\text{total blonde}}{\text{total}} = \frac{8}{27} = 30\%$$

	Brown	Blonde	Red	Total
Boys	5	2	3	10
Girls	7	6	4	17
Total	12	8	7	27

15. 1. a. You surveyed the members of your school club about the type of end of the year party they would like. Below is a two-way table for the results. Create a two-way table displaying all the relative frequencies.

	Males	Females	Total
Miniature Golf	8	4	12
Skating	3	10	13
Laser Tag	9	6	15
Total	20	20	40

	Males	Females	Total
Miniature Golf	$\frac{8}{40} = 20\%$	$\frac{4}{40} = 10\%$	$\frac{12}{40} = 30\%$
Skating	$\frac{3}{40} = 7.5\%$	$\frac{10}{40} = 25\%$	$\frac{13}{40} = 32.5\%$
Laser Tag	$\frac{9}{40} = 22.5\%$	$\frac{6}{40} = 15\%$	$\frac{15}{40} = 37.5\%$
Total	$\frac{20}{40} = 50\%$	$\frac{20}{40} = 50\%$	100%

b. Using the above data, find the conditional probability of

- (i) those wanting laser tag, given that they are female.

$$\frac{6}{20} = 30\%$$

- (ii) those wanting miniature golf, given that they are male.

$$\frac{8}{20} = 40\%$$

- (iii) females, given that they want laser tag.

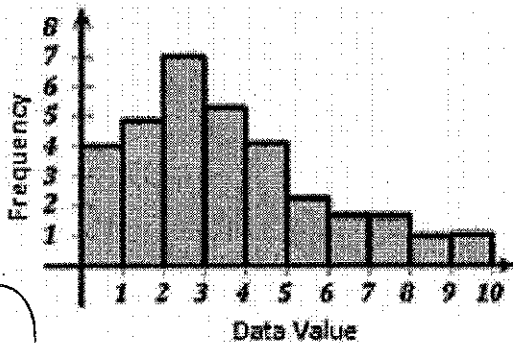
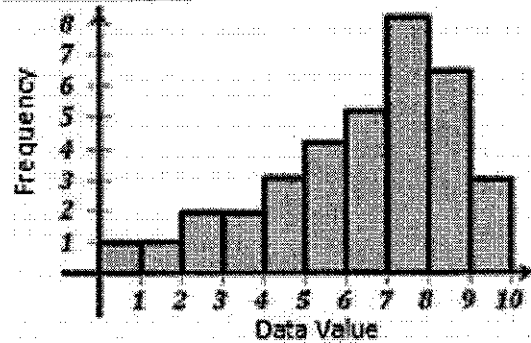
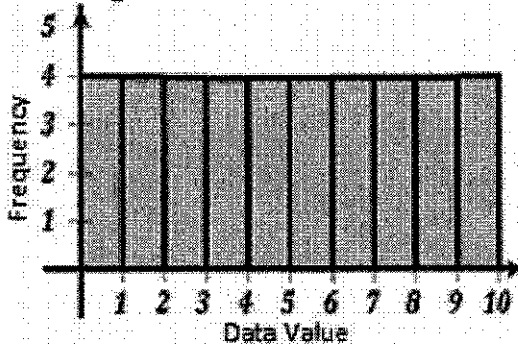
$$\frac{6}{15} = 40\%$$

- (iv) males, given that they want miniature golf.

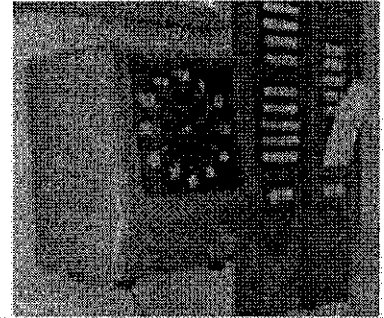
Correlation/Line of Best Fit

$$\frac{8}{12} = 66.7\%$$

16. Which histogram below shows a data set that is skewed right?



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



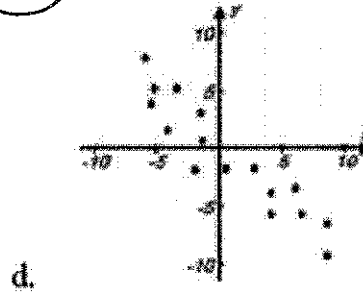
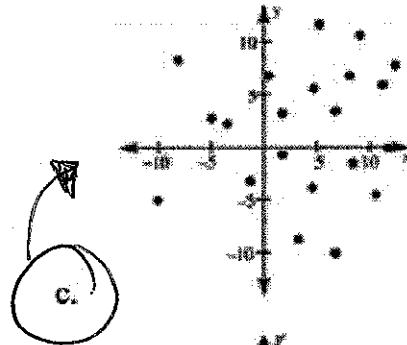
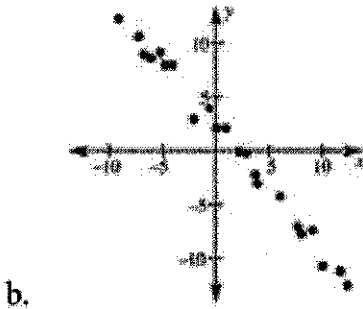
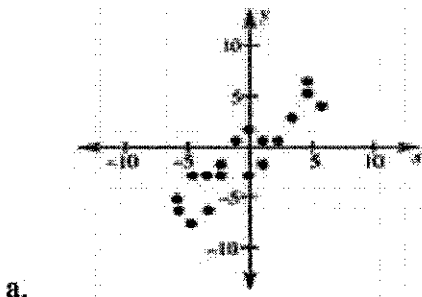
ON GRAPHING CALCULATOR

STAT
 ↳ EDIT (To Enter Data) STAT
 ↳ CALC (To Find Equation)

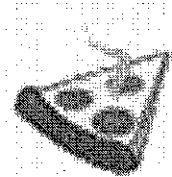
Year	1961	1964	1967	1969	1975	1976	1978	1979	1981	1992	1998
Years after 1960 (x)	1	4	7	9	15	16	18	19	21	32	38
Minimum Wage (y)	\$1.00	\$1.25	\$1.50	\$1.60	\$2.10	\$2.30	\$2.65	\$2.90	\$3.35	\$4.25	\$5.15

- a. $y = 0.110x + 1.327$
 b. $y = 0.112x + 0.888$
 c. $y = 0.114x + 0.691$
 d. $y = 0.115x + 0.644$
- $m = \frac{y_2 - y_1}{x_2 - x_1}$

18. Which data set below has the weakest correlation?



19. The table displays data for Nutrition Guides of a single serving of particular foods.



Assuming there exists a correlation between Calories and Fat Grams, find a linear regression model determines approximate Fat Grams (y) as a function of Calories (x).

Food	Pizza Roll	Pop Tarts	Gold Fish Ck	Koda CC	Donuts	Orzo Ice Cream	Baron Pizza	Toaster Strudel
Calories (x)	230	220	150	130	140	160	340	190
Fat Grams (y)	11	4	6	5	7	8	18	8

- a. $r \approx 0.917$
 b. $r \approx 0.700$
 c. $r \approx 0.946$
 d. $r \approx 0.836$