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MAKING & USING A STUDY GUIDE

Exam-1: Multi-Variable Categorical Data

Study Guide: helps you ① summarize,
② visualize, and analyze ③
concepts learned in class

* Warning: simply making a study guide
does not guarantee you an
A+ on the test.

1

The table shows the number of adults, teens, and children under 13 who visited the local petting zoo one week. How many adults visited the petting zoo on the weekend?

	Su	M	Tu	W	Th	F	Sa
Adult	114	40	34	50	23	9	90
Teen	27	0	14	20	10	6	10
Child	59	32	55	66	31	10	46

$$\begin{array}{r} 114 \\ + 90 \\ \hline 204 \end{array}$$

2

The results of a survey of 150 students about whether they own an electronic tablet or a laptop are shown in the two-way frequency table.

Gender	Device				Total
	Electronic Tablet	Laptop	Both	Neither	
Girl	11	53	7	17	88
Boy	+ 12	+ 33	+ 6	+ 11	62
Total	23	86	13	28	150

$$\begin{array}{r} 150 \\ - 88 \\ \hline 62 \end{array}$$

Complete the table. Do the surveyed students own more laptops or more electronic tablets?

$$\begin{array}{r} 62 \\ - 33 \\ - 6 \\ - 11 \\ \hline 12 \end{array}$$

The students own more

3

The following frequency data shows the number of states, including the District of Columbia, that favored each party in the presidential popular vote in 1976 and in 2012.

Complete the table with relative frequencies using percents rounded to the nearest tenth.

		2012 Election		
1976 Election	Democrat	Republican	Total	
Democrat	$\frac{12}{51} = 0.235$ 23.5%	$\frac{12}{51} = 0.235$ 23.5%	$\frac{24}{51} = 0.471$ 47.1%	
Republican	$\frac{15}{51} = 0.294$ 29.4%	$\frac{12}{51} = 0.235$ 23.5%	$\frac{27}{51} = 0.529$ 52.9%	
Total	$\frac{27}{51} = 0.529$ 52.9%	$\frac{24}{51} = 0.471$ 47.1%	$\frac{51}{51} = 1$ 100%	

4

Charles surveyed 100 students about their favorite color.

Shown are two different tables about a survey involving students. Each survey had a few questions about musical preferences. All students answered all questions. Complete the tables. What type of music do the students prefer?

	Likes Classical Music		
Gender	Yes	No	Total
Girl	23	23	46
Boy	27	+ 27	54
Total	50	50	100

	Likes Blues Music		
Gender	Yes	No	Total
Girl	33	13	46
Boy	41	+ 13	54
Total	74	26	100

$46 - 23 = 23$
 $100 - 46 = 54$
 $54 - 27 = 27$
 $100 - 50 = 50$

$100 - 46 = 54$
 $54 - 13 = 41$

Same

All students answered all the questions, so total girls in both is 46, and the total students in both is 100. Overall, the students prefer blues music: 74 students like blues, 50 like classical.

5

Use the table of frequency data to complete the relative frequency table for this data using percents rounded to the nearest tenth.

Class Survey of Favorite Colors							
Favorite Color	Red	Orange	Yellow	Green	Blue	Purple	Total
Frequency	2	5	3	6	7	1	24

Class Survey of Favorite Colors							
Favorite Color	Red	Orange	Yellow	Green	Blue	Purple	Total
Relative Frequency	$\frac{2}{24} = 0.083$ 8.3%	$\frac{5}{24} = 0.208$ 20.8%	$\frac{3}{24} = 0.125$ 12.5%	$\frac{6}{24} = 0.250$ 25%	$\frac{7}{24} = 0.292$ 29.2%	$\frac{1}{24} = 0.042$ 4.2%	$\frac{24}{24} = 1$ 100%

$x > 5$ around - of
 $x < 5$ keep same

6

The results of a survey of 70 students and the foreign language they are studying are shown in the two-way frequency table.

	Language			
Gender	Chinese	French	Spanish	Total
Girl	2	19	14	35
Boy	1	20	14	35
Total	3	39	28	70

Can you use gender to predict a preference for taking Spanish?

$$\frac{14}{35} = 0.4$$

The conditional relative frequency of taking Spanish, given the student is a girl is %. The percent of all students who take Spanish is %.

$$\frac{28}{70} = 40\%$$

~~Yes~~ NO

both genders are to be taking Spanish.

7

Use these data to find the measures of center.

~~28~~, ~~21~~, ~~16~~, ~~32~~, ~~14~~, ~~23~~, ~~32~~, ~~6~~

Ordered the list
and cross out to
middle

What is the median?

The median is .

~~6~~, ~~14~~, ~~16~~, 21, 23, ~~28~~, ~~32~~, ~~32~~

$$\frac{21 + 23}{2} = \frac{44}{2} = 22$$

Find the mean and median of the data set.

Find the mean and median of the data set.

Niles scored 60, 64, 62, 61, 63, and 80 on his 6 geography tests.

The mean is .

The median is .

cross-off

mean

$$\frac{60 + 64 + 62 + 61 + 63 + 80}{6} = \frac{390}{6} = 65$$

median

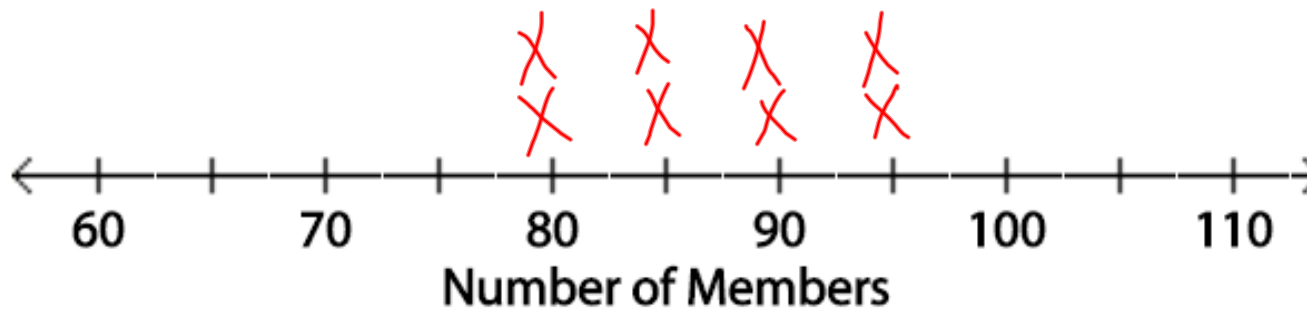
~~60~~, ~~61~~, 62, 63, ~~64~~, ~~80~~

$$\frac{62 + 63}{2} = 62.5$$

9

The numbers of members in 8 workout clubs are 95, 90, 85, 80, 80, 90, 95, and 85.

Select the appropriate dot plot for the data set using an appropriate scale for the number line.

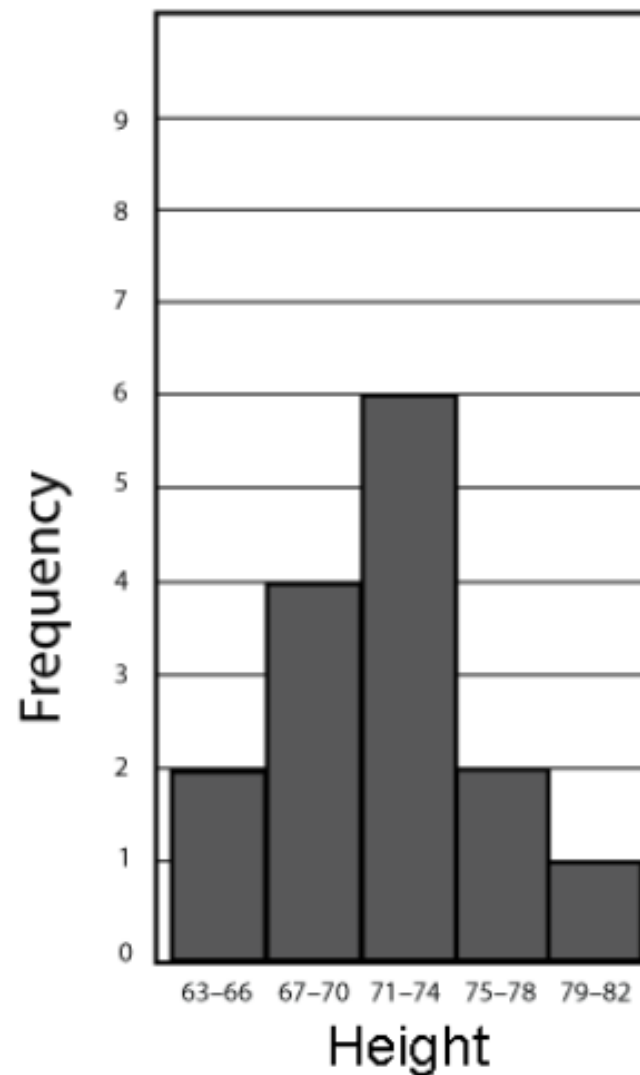


10

Listed are the heights of players, in inches, on a basketball team. Complete the frequency table from the data.

~~80, 75, 73, 67, 63, 75, 72, 72, 68, 65, 71, 70, 74, 74, 69~~

	x	y	
	Height Interval	Frequency	
1	63-66	<input type="text" value=" "/>	= 2
2	67-70	<input type="text" value=" "/>	= 4
3	71-74	<input type="text" value=" "/>	= 6
4	75-78	<input type="text" value=" "/>	= 2
5	79-82	<input type="text" value=" "/>	= 1

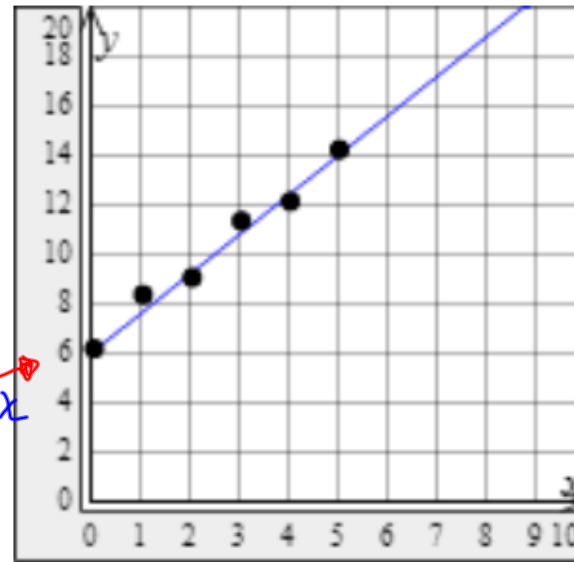


Aoiffe plants a tree sapling in her yard and measures its height every year. Her measurements so far are shown. Make a scatter plot and find a line of fit if the variables have a correlation.

x Years after planting	y Height (ft)
0	6.1
1	8.3
2	9
3	11.3
4	12.1
5	14.2

Plot as (x, y)

y -intercept



11

$$y = mx + b$$

$$\text{Slope } (m) = \frac{y_2 - y_1}{x_2 - x_1}$$

The equation of your line of fit

$$y = \frac{8}{5}x + 6$$

First and Last point

Choosing the points $(0, 6)$ and $(5, 14)$, find the slope.

$$m = \frac{14 - 6}{5 - 0} = \frac{8}{5}$$

12

Aoiffe plants a tree sapling in her yard and measures its height every year. The model is shown below.

$$y = \frac{8}{5}x + 7$$

plug-in for x

How tall will Aoiffe's tree will be 30 years after she planted it?

$$\begin{aligned} &= \frac{8}{5}(30) + 7 = 8 \cdot 6 + 7 \\ &= 55 \end{aligned}$$

Substitute x for the number of years.

Multiply then add.

Aoiffe's tree will be feet after 30 years.

13

Which of the following usually have a positive correlation? Select all that apply.

- A** the weight of a car and the number of miles per gallon
- B** the outside temperature and the amount of heating oil used
- C** the amount of time studying and the grade on a science exam
- D** the amount of time training and the total distance run

Note

- Positive correlation points lie close to a line with positive slope.

14

State whether the situation is best represented by an exponential or linear function. Then enter an exponential or linear function for the model and state whether the model is increasing or decreasing.

Enrollment at a school is initially 445 students and grows by 3% per year.

Part 1 out of 2

The situation would be best represented by a(n) function.

Part 2

The exponential function is $E(t) =$ $($ $)^t$.

The function is .

% mean exponential ↴

↑ increasing

1 + 0.03 ↴ 3%

15

State whether the situation is best represented by an exponential or linear function. Then enter an exponential or linear function for the model and state whether the model is increasing or decreasing.

A salesperson initially earns \$50,432 per year, and receives a yearly raise of \$875.

Part 1 ✓

The situation would be best represented by a(n) function.

Part 2 ✓

The linear function is $S(t) =$ $+$ $t.$

The function is .

↑
increasing
+

means
"linear"