

Name \_\_\_\_\_

Date \_\_\_\_\_

Review for Statistics #2

1. For what value of  $x$  will  $x$  and 12 have the same mean (average) as 4 and 30?

[1] 4

[2] 48

[3] 22

[4] 12

2. Find the median: 5, 15, 10, 15, 5, 10, 10, 20, 25, 15.

[1] 10

[2] 12.5

[3] 15

[4] no median

3. Andy has grades of 84, 65, and 76 on three math tests. What grade must he obtain on the next test to have an average of exactly 80 for the four tests?

[1] 80

[2] 93

[3] 95

[4] 98

4. Another term for line of best fit is

[1] scatter plot

[2] line of regression

[3] tangent line

[4] slope

5. Which situation describes a situation that is *not* a causal relationship?

[1] The rooster crows and the sun rises.

[2] The more miles driven the more gasoline needed.

[3] The more powerful the microwave the faster the food cooks.

[4] The faster the pace of the runner the quicker the runner finishes.

6. Which situation should be analyzed using bivariate data?

- [1] Ms. Saleem keeps a list of the amount of time her daughter spends on her social studies homework.
- [2] Mr. Benjamin tries to see if his students' shoe sizes are directly related to their heights.
- [3] Mr. DeStefan records his customers' best video game scores during the summer.
- [4] Mr. Chan keeps track of his daughter's algebra grades for the quarter.

7. The heights of students in inches in Block 3 math class are: 65, 63, 68, 59, 74, 59, 68, 61, 64, 60, 69, 72, 55, 64. What percent (to the *nearest percent*) of the students are shorter than 5 feet 7 inches?

- [1] 28%
- [2] 29%
- [3] 50%
- [4] 64%

8. The weekly salaries of six employees at McDonalds are \$140, \$220, \$90, \$180, \$140, \$200. Find the mean salary for these six salaries.

- [1] \$140
- [2] \$160
- [3] \$161.67
- [4] \$180

9. A storeowner kept a tally of the sizes of suits purchased in her store. Which measure of central tendency should the storeowner use to describe the average size suit sold?

- [1] mean
- [2] mode
- [3] median
- [4] range

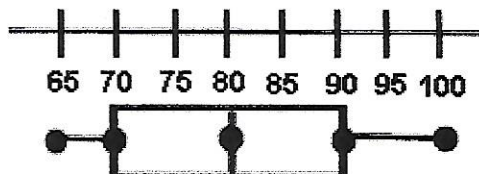
10. According to the box-and-whisker plot shown below, what is the third quartile value?

[1] 70

[2] 80

[3] 90

[4] 100



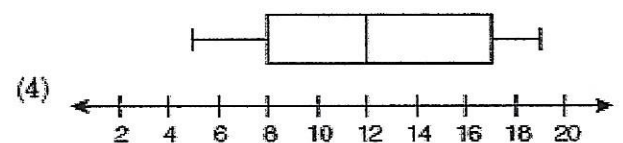
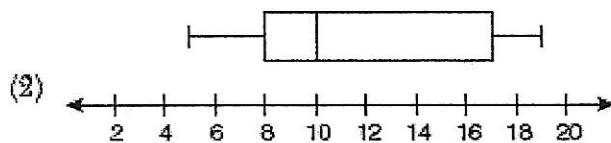
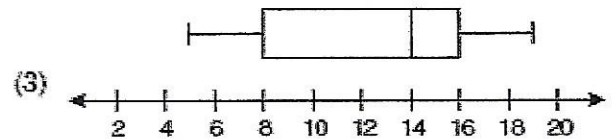
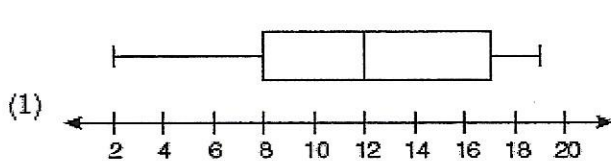
11. Data regarding the students in the senior class: 578 students, 236 honor students, 150 scholarship winners, 51% male. This data can be described as being

- [1] qualitative                      [2] quantitative                      [3] both                      [4] neither

12. A study is conducted to determine whether office workers have high blood pressure. The participants in the study were friends of the researcher who shared the same doctor. Is this study biased?

- [1] yes                      [2] no

13. The data set 5, 6, 7, 8, 9, 9, 9, 10, 12, 14, 17, 17, 18, 19, 19 represents the number of hours spent on the Internet in a week by students in a mathematics class. Which box-and-whisker plot represents this data?



14. When data is graphed and a positive correlation is observed, the first set of data is always causing the affect seen in the second set of data.

- [1] True                      [2] False

15. A tally was made of the number of times each color of crayon was used by a kindergarten class. Which measure of central tendency should the teacher use to determine which color is the favorite color of her class?

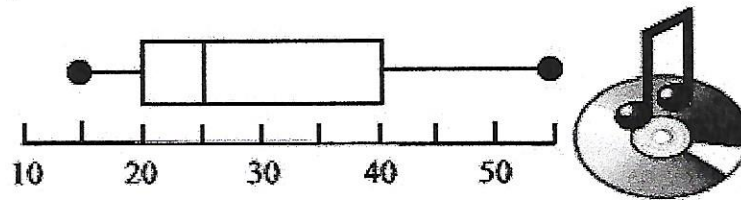
- [1] mean                      [2] mode                      [3] median                      [4] range

16. Given the data below, what type of correlation exists between the number of hours spent in the mall and the number of dollars spent.

<b>Hours in Mall</b>	10	8	9	3	1	2	5	6	7	8	2	3
<b>Dollars spent</b>	40	15	24	20	10	35	50	70	18	25	100	60

- [1] positive correlation      [2] negative correlation      [3] no correlation apparent

17. The number of iTunes downloaded by 25 students in one week ranges from 15 to 55. The box-and-whisker plot below depicts this data.

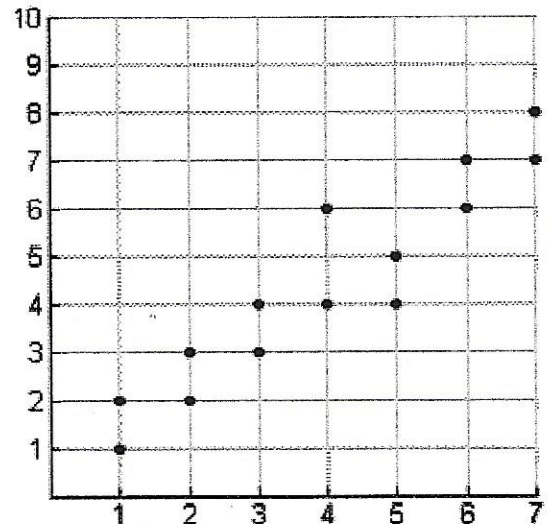


What is the number of iTunes at the 50th percentile?

- [1] 15      [2] 20      [3] 25      [4] 40

18. The correlation seen in the graph at the right would be best described as:

- [1] high positive correlation  
 [2] low positive correlation  
 [3] high negative correlation  
 [4] low negative correlation





19. The values of 11 houses on Washington Street are shown in the table. Find the mean value of these houses in dollars.

Value per House	Number of Houses
\$100,000	1
\$175,000	5
\$200,000	4
\$700,000	1

[1] \$175,000

[2] \$200,000

[3] \$225,000

[4] \$240,000

20. The science test grades are posted. The class did very well. All students taking the test scored over 75. Unfortunately, 4 students were absent for the test and the computer listed their scores as 0 until the test is taken. Assuming that no score repeated more times than the 0's, what measure of central tendency would most likely give the best representation of this data?

[1] mean

[2] mode

[3] median

[4] range

21. The two-way frequency table, shown below, displays the data collected from a random group of high school students regarding whether they "liked" skateboards and/or "liked" snowmobiles. Answer the questions below, regarding this table.

	Like Skateboards	Do Not Like Skateboards	Totals
Like Snowmobiles	80	25	105
Do not like Snowmobiles	45	10	55
Totals	125	35	160

MathBits.com

a. How many students participated in the survey?

Choose: [1] 55 [2] 105 [3] 125 [4] 160

b. How many students said they "like" snowmobiles?

Choose: [1] 25 [2] 80 [3] 105 [4] 125

c. Which of the following values is referred to as a "marginal frequency"?

Choose: [1] 10 [2] 25 [3] 35 [4] 45

d. How many of the students "like" snowmobiles, but "do not like" skateboards?

Choose: [1] 10 [2] 25 [3] 35 [4] 45

e. How many students said they "do not like" skateboards?

Choose: [1] 10 [2] 25 [3] 35 [4] 55

22. Freshman girls and boys were surveyed to choose their favorite subject from the list of Math, English or Science. The results are shown in the two-way relative frequency table below (rounding to nearest hundredth). Answer the questions below, regarding this table.

	Math	English	Science	Totals
Girls	$\frac{50}{150} = 0.33$	$\frac{40}{150} = 0.27$	$\frac{60}{150} = 0.40$	$\frac{150}{150} = 1.00$
Boys	$\frac{65}{165} = 0.39$	$\frac{30}{165} = 0.18$	$\frac{70}{165} = 0.42$	$\frac{165}{165} = 1.00$
Totals	$\frac{115}{315} = 0.37$	$\frac{70}{315} = 0.22$	$\frac{130}{315} = 0.41$	$\frac{315}{315} = 1.00$

MathBits.com

a. How many girls participated in the survey?

Choose: [1] 50      [2] 60      [3] 150      [4] 315

b. What percentage of the boys chose "Science"?

Choose: [1] 41%      [2] 42%      [3] 4.1%      [4] 4.2%

c. This table shows relative frequencies based upon \_\_\_\_\_.

Choose: [1] the whole table      [2] the rows      [3] the columns

d. What percentage of the girls chose "Math"?

Choose: [1] 27%      [2] 33%      [3] 39%      [4] 40%

e. What percentage of the students chose "English"?

Choose: [1] 27%      [2] 18%      [3] 22%      [4] 41%

23. You are testing a theory that says that students who speak a foreign language are also strong mathematics students. You survey the freshman class and the results are shown below, in an incomplete two-way frequency table. Answer the questions below, regarding this table. Percentage answers rounded to nearest percent.

	Speak a Foreign Language	Do Not Speak a Foreign Language	Totals
Math Average $\geq 90$	70	15	
Math Average NOT $\geq 90$	10	50	
Totals			

MathBits.com



a. How many students were surveyed?

Choose: [1] 65 [2] 85 [3] 145 [4] 80

b. What percentage of the students speak a foreign language and have a math average greater than or equal to 90?

Choose: [1] 41% [2] 48% [3] 82% [4] 88%

c. What percentage of the students with a math average greater than or equal to 90 do not speak a foreign language?

Choose: [1] 10% [2] 18% [3] 23% [4] 25%

d. How many of the students do not speak a foreign language?

Choose: [1] 15 [2] 50 [3] 60 [4] 65

e. Does the table appear to support the theory that students who speak a foreign language are also strong mathematics students? Explain.

Choose: [1] Yes [2] No

24. Allison collected data to see if there was a relationship between students having blue eyes and the students wearing yellow on the day of the survey. She randomly surveyed the freshman class and the results are shown below. Answer the questions below, regarding this table. Percentage answers rounded to nearest percent.

	Wearing Yellow	Not Wearing Yellow	Totals
Blue Eyes	10	2	12
Not Blue Eyes	30	20	50
Totals	40	22	62

MathBits.com

You will need to prepare row conditional relative frequencies for this table.

a. What are the row conditional relative (joint) frequencies, from left to right, for the category "Blue Eyes"?

Choose: [1] 16%; 3% [2] 83%; 17% [3] 20%; 4% [4] 75%; 25%

b. What percentage of "Not Blue Eyes" students were "Not Wearing Yellow"?

Choose: [1] 20% [2] 30% [3] 40% [4] 45%

Name Key

Date \_\_\_\_\_

Review for Statistics #2

1. For what value of  $x$  will  $x$  and 12 have the same mean (average) as 4 and 30?

[1] 4

[2] 48

[3] 22

[4] 12

$$\frac{x+12}{2} = \frac{4+30}{2}$$

$$\frac{x+12}{2} = \frac{34}{2}$$

$$\frac{x+12}{2} = 17$$

2. Find the median: ~~5, 15, 10, 15, 5, 10, 10, 20, 25, 15.~~

[1] 10

[2] 12.5

[3] 15

[4] no median

$$5, 5, 10, 10, 10, 15, 15, 20, 25$$

12.5

3. Andy has grades of 84, 65, and 76 on three math tests. What grade must he obtain on the next test to have an average of exactly 80 for the four tests?

[1] 80

[2] 93

[3] 95

[4] 98

let  
 $x = 4^{\text{th}}$   
test  
score

$$\frac{84+65+76+x}{4} = 80$$

$$\frac{225+x}{4} = 80$$

$$\begin{array}{r} 225+x = 320 \\ -225 \\ \hline x = 95 \end{array}$$

4. Another term for line of best fit is

[1] scatter plot

[2] line of regression

[3] tangent line

[4] slope

5. Which situation describes a situation that is *not* a causal relationship?

[1] The rooster crows and the sun rises.

[2] The more miles driven the more gasoline needed.

[3] The more powerful the microwave the faster the food cooks.

[4] The faster the pace of the runner the quicker the runner finishes.

doesn't cause it



2 variables, comparison

6. Which situation should be analyzed using bivariate data?

- [1] Ms. Saleem keeps a list of the amount of time her daughter spends on her social studies homework.
- [2] Mr. Benjamin tries to see if his students' shoe sizes are directly related to their heights.
- [3] Mr. DeStefan records his customers' best video game scores during the summer.
- [4] Mr. Chan keeps track of his daughter's algebra grades for the quarter.

7. The heights of students in inches in Block 3 math class are: 65, 63, 68, 59, 74, 59, 68, 61, 64, 60, 69, 72, 55, 64. What percent (to the *nearest percent*) of the students are shorter than 5 feet 7 inches?

- [1] 28%
- [2] 29%
- [3] 50%
- [4] 64% 67 inches

$\frac{9}{14} = 64\%$

8. The weekly salaries of six employees at McDonalds are \$140, \$220, \$90, \$180, \$140, \$200. Find the mean salary for these six salaries.

- [1] \$140
- [2] \$160
- [3] \$161.67
- [4] \$180

$\frac{970}{6} = 161.67$

9. A storeowner kept a tally of the sizes of suits purchased in her store. Which measure of central tendency should the storeowner use to describe the average size suit sold?

- [1] mean
- [2] mode
- [3] median
- [4] range

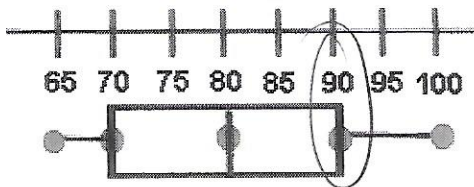
10. According to the box-and-whisker plot shown below, what is the third quartile value?

[1] 70

[2] 80

[3] 90

[4] 100



11. Data regarding the students in the senior class: 578 students, 236 honor students, 150 scholarship winners, 51% male. This data can be described as being

[1] qualitative

[2] quantitative

[3] both

[4] neither

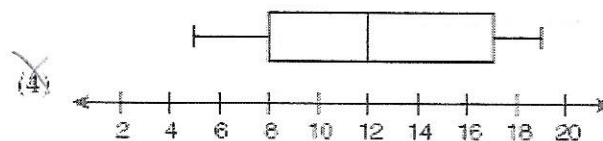
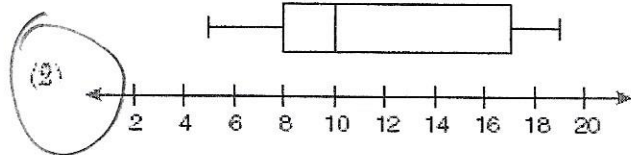
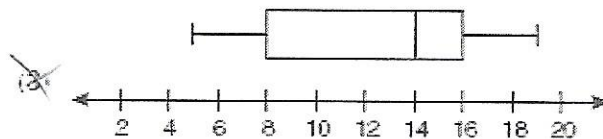
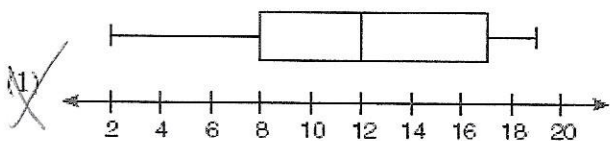
# (can be measured)

12. A study is conducted to determine whether office workers have high blood pressure. The participants in the study were friends of the researcher who shared the same doctor. Is this study biased?

[1] yes

[2] no

13. The data set 5, 6, 7, 8, 9, 9, 9, 10, 12, 14, 17, 17, 18, 19, 19 represents the number of hours spent on the Internet in a week by students in a mathematics class. Which box-and-whisker plot represents this data?



14. When data is graphed and a positive correlation is observed, the first set of data is always causing the affect seen in the second set of data.

[1] True

[2] False



No!  
Not always.

15. A tally was made of the number of times each color of crayon was used by a kindergarten class. Which measure of central tendency should the teacher use to determine which color is the favorite color of her class?

[1] mean

[2] mode

[3] median

[4] range

16. Given the data below, what type of correlation exists between the number of hours spent in the mall and the number of dollars spent.

L<sub>1</sub>

Hours in Mall	10	8	9	3	1	2	5	6	7	8	2	3
Dollars spent	40	15	24	20	10	35	50	70	18	25	100	60

L<sub>2</sub>

[1] positive correlation

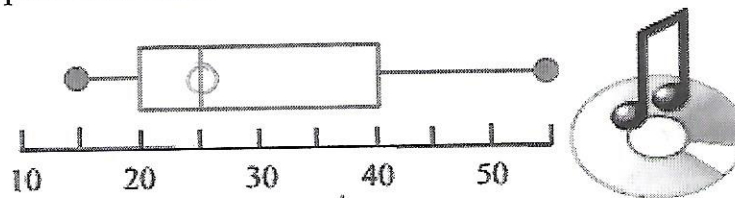
[2] negative correlation

[3] no correlation apparent

Zoom ZoomStat



17. The number of iTunes downloaded by 25 students in one week ranges from 15 to 55. The box-and-whisker plot below depicts this data.



What is the number of iTunes at the 50th percentile?

[1] 15

[2] 20

[3] 25

[4] 40

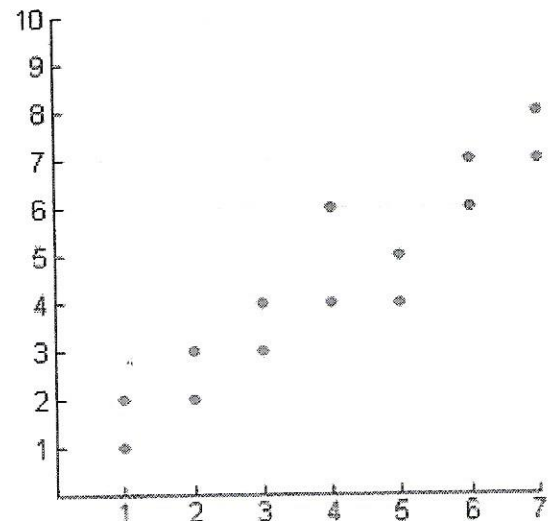
18. The correlation seen in the graph at the right would be best described as:

[1] high positive correlation

[2] low positive correlation

[3] high negative correlation

[4] low negative correlation





19. The values of 11 houses on Washington Street are shown in the table. Find the mean value of these houses in dollars.

Value per House	Number of Houses
\$100,000	1
\$175,000	5
\$200,000	4
\$700,000	1

$= 100,000$   
 $= 875,000$   
 $= 800,000$   
 $= 700,000$

$\frac{2475,000}{11} = 225,000$

[1] \$175,000

[2] \$200,000

[3] \$225,000

[4] \$240,000

20. The science test grades are posted. The class did very well. All students taking the test scored over 75. Unfortunately, 4 students were absent for the test and the computer listed their scores as 0 until the test is taken. Assuming that no score repeated more times than the 0's, what measure of central tendency would most likely give the best representation of this data?

[1] mean

[2] mode

[3] median

[4] range

*b/c 0's are outliers*

21. The two-way frequency table, shown below, displays the data collected from a random group of high school students regarding whether they "liked" skateboards and/or "liked" snowmobiles. Answer the questions below, regarding this table.

	Like Skateboards	Do Not Like Skateboards	Totals
Like Snowmobiles	80	25	105
Do not like Snowmobiles	45	10	55
Totals	125	35	160

MathBits.com

a. How many students participated in the survey?

Choose: [1] 55

[2] 105

[3] 125

[4] 160

b. How many students said they "like" snowmobiles?

Choose: [1] 25

[2] 80

[3] 105

[4] 125

c. Which of the following values is referred to as a "marginal frequency"?

Choose: [1] 10

[2] 25

[3] 35

[4] 45

d. How many of the students "like" snowmobiles, but "do not like" skateboards?

Choose: [1] 10

[2] 25

[3] 35

[4] 45

e. How many students said they "do not like" skateboards?

Choose: [1] 10

[2] 25

[3] 35

[4] 55

22. Freshman girls and boys were surveyed to choose their favorite subject from the list of Math, English or Science. The results are shown in the two-way relative frequency table below (rounding to nearest hundredth). Answer the questions below, regarding this table.

	Math	English	Science	Totals
Girls	$\frac{50}{150} = 0.33$	$\frac{40}{150} = 0.27$	$\frac{60}{150} = 0.40$	$\frac{150}{150} = 1.00$
Boys	$\frac{65}{165} = 0.39$	$\frac{30}{165} = 0.18$	$\frac{70}{165} = 0.42$	$\frac{165}{165} = 1.00$
Totals	$\frac{115}{315} = 0.37$	$\frac{70}{315} = 0.22$	$\frac{130}{315} = 0.41$	$\frac{315}{315} = 1.00$

MathBits.com

a. How many girls participated in the survey?

Choose: [1] 50 [2] 60 [3] 150 [4] 315

b. What percentage of the boys chose "Science"?

Choose: [1] 41% [2] 42% [3] 4.1% [4] 4.2%

c. This table shows relative frequencies based upon

Choose: [1] the whole table [2] the rows [3] the columns

d. What percentage of the girls chose "Math"?

Choose: [1] 27% [2] 33% [3] 39% [4] 40%

e. What percentage of the students chose "English"?

Choose: [1] 27% [2] 18% [3] 22% [4] 41%

23. You are testing a theory that says that students who speak a foreign language are also strong mathematics students. You survey the freshman class and the results are shown below, in an incomplete two-way frequency table. Answer the questions below, regarding this table. Percentage answers rounded to nearest percent.

	Speak a Foreign Language	Do Not Speak a Foreign Language	Totals
Math Average $\geq 90$	70	15	85
Math Average NOT $\geq 90$	10	50	60
Totals	80	65	145

MathBits.com



a. How many students were surveyed?

Choose: [1] 65 [2] 85 [3] 145 [4] 80

b. What percentage of the students, speak a foreign language and have a math average greater than or equal to 90?

Choose: [1] 41% [2] 48% [3] 82% [4] 88%  $\frac{70}{145} = 48\%$

c. What percentage of the students with a math average greater than or equal to 90 do not speak a foreign language?

Choose: [1] 10% [2] 18% [3] 23% [4] 25%  $\frac{15}{85} = 18\%$

d. How many of the students do not speak a foreign language?

Choose: [1] 15 [2] 50 [3] 60 [4] 65

e. Does the table appear to support the theory that students who speak a foreign language are also strong mathematics students? Explain.

Choose: [1] Yes [2] No  $\frac{70}{80} = .88$  vs  $\frac{15}{65} = .23$

24. Allison collected data to see if there was a relationship between students having blue eyes and the students wearing yellow on the day of the survey. She randomly surveyed the freshman class and the results are shown below. Answer the questions below, regarding this table. Percentage answers rounded to nearest percent.

	Wearing Yellow	Not Wearing Yellow	Totals
Blue Eyes	10	2	12
Not Blue Eyes	30	20	50
Totals	40	22	62

MathBits.com

You will need to prepare row conditional relative frequencies for this table.

a. What are the row conditional relative (joint) frequencies, from left to right, for the category "Blue Eyes"?

Choose: [1] 16%; 3% [2]  $\frac{10}{12}$ ;  $\frac{2}{12}$  [3] 20%; 4% [4] 75%; 25%

Choose: [1] 20% [2] 30% [3] 40% [4] 45%

\*Question missing\*

b) what percentage of "Not Blue Eyes" students were "Not wearing Yellow"  $\frac{20}{50} = 40\%$