

Statistics Review - EOC Practice

Name: Answer key

1. The following are Jack's scores on his Biology tests.
72, 68, 84, 86, 71, 63, 85

a. Find the mean and standard deviation. $\bar{x} = 75.57$ $\sigma_x = 8.6$

b. Which tests are within one standard deviation of the mean? 84, 71 and 72, 68

c. If Jay makes a 75 on his next test, how would it affect the standard deviation?
The standard dev. will decrease, curve will be more narrow.

2. The following are Jill's scores on her Biology tests.

76, 83, 91, 86, 70, 62, 97

a. Find the mean and standard deviation. $\bar{x} = 80.71$ $\sigma_x = 11.28$

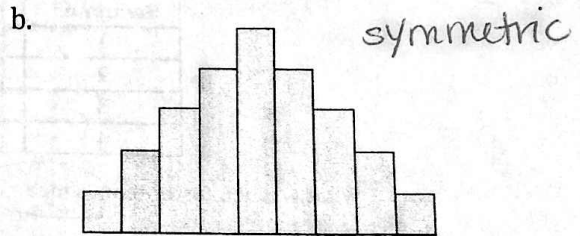
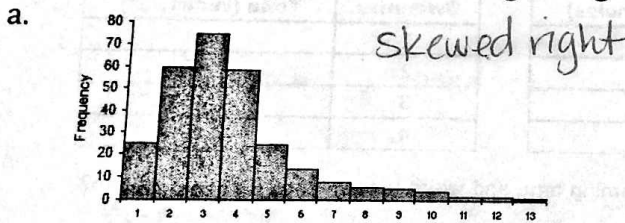
b. Which tests are NOT within one standard deviation of the mean? 62, 97

c. If Jill makes a 100 on her next tests, how would it affect the standard deviation?
The standard dev. will increase, curve will be more spread out

d. Why is the standard deviation for Jill higher than the standard deviation for Jack?

Because Jill's range of scores is higher than Jack's range so her std. dev is more widely spread.

3. Describe the shape of the following histograms.



4. The table below shows the number of questions ten students answered incorrectly on a fifty-question test.

4	3	2	1
0	2	14	3
1	5		

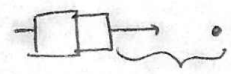
plug into calculator to see box and whisker's shape and test for skewness

Which statement describes the display of the distribution of questions answered incorrectly?

(A) The student who missed 0 items caused the distribution to be skewed to the right.

(B) The student who missed 0 items caused the distribution to be skewed to the left.

(C) The student who missed 14 items caused the distribution to be skewed to the right.



(D) The student who missed 14 items caused the distribution to be skewed to the left.

14 is outlier

5. John recorded the weight of six bicycle riders and their average speeds. The results are shown in the table below.

Weight (pounds)	Average Speed (mph)
124	18.6
136	17.2
142	17.0
110	20.1
109	19.8
150	16.8

plug into calculator to see graph of scatter plot

Using a linear model, what is the meaning of the correlation coefficient in the context of the data?

- A There is a strong negative correlation showing that the average speed decreases as the weight of the rider increases.
- B There is a strong negative correlation showing that the average speed increases as the weight of the rider increases.
- C There is a strong positive correlation showing that the average speed decreases as the weight of the rider increases.
- D There is a strong positive correlation showing that the average speed increases as the weight of the rider increases.
6. Two schools each sent a four-member team to compete in a one-lap swim competition. The table below lists the number of minutes each swimmer took to swim one lap.

Team A 1.99

Swimmer	Time (in minutes)
1	2.11
2	1.89
3	1.90
4	2.06

Team B 1.9625

Swimmer	Time (in minutes)
1	1.88
2	1.96
3	2.23
4	1.78

What was the faster team's mean, one-lap swimming time and which team does that time belong to?

- A 1.99 minutes; Team A
- B 1.99 minutes; Team B
- C 1.96 minutes; Team A
- D 1.96 minutes; Team B

7.

The table below shows the lengths of fences a company installed during a week.

400 feet	460 feet	380 feet	410 feet
450 feet	2,250 feet	470 feet	380 feet
275 feet	520 feet		

outlier 2,250 has great effect on mean

Which statement is true?

- A The 275-foot fence caused the mean to be significantly lower than the median.
- B The 275-foot fence caused the median to be significantly lower than the mean.
- C The 2,250-foot fence caused the mean to be significantly greater than the median.
- D The 2,250-foot fence caused the median to be significantly greater than the mean.

8.

Which **best** describes the relationship between x and y for the values in the table below?

- A ~~weak negative correlation~~
- B ~~weak positive correlation~~
- C ~~strong negative correlation~~
- D ~~strong positive correlation~~

x	y
0	-3
2	-2
3	0
5	3
6	5

9.

A survey asked the ages of people and whether they purchase diet soda or regular soda. The results are shown in table below.

Ages of People Surveyed										
Diet Soda	26	42	41	18	39	22	30	34	37	22
Regular Soda	16	48	32	21	26	41	35	22	46	27

$(30+34) \div 2 = 32$
 $(21+32) \div 2 = 29.5$

What is the difference in the median age of those who purchase diet soda to those who purchase regular soda?

2.5

10. Anna is studying body proportions for a science project. She measured the height and head circumference of 10 people in her class. The results are shown in the table below.

Height (inches)	Head Circumference (inches)
60	8.5
67	9.5
68	9.5
62	9.0
71	10.5
70	10.0
61	8.5
70	10.0
65	9.0
66	9.5

Handwritten notes: "7 inches" with an arrow pointing to the height column, and "5 inches" with an arrow pointing to the head circumference column. There are also handwritten "1 inch" annotations next to the circled values in the table.

What is the meaning of the slope of the line of best fit for the data?

- (A) For every 1 inch increase in height, there is about a 6 inch increase in head circumference.
- (B) For every 1 inch increase in head circumference, there is about a 6 inch increase in height.
- (C) For every 1 inch increase in head circumference, there is about a 1 inch increase in height.
- (D) For every $\frac{1}{6}$ inch increase in height, there is about a 6 inch increase in head circumference.

11. The table below shows the area of several states.

State	Area (thousands of square miles)
Connecticut	6
Georgia	59
Maryland	12
Massachusetts	11
New Hampshire	9
New York	54
North Carolina	54
Pennsylvania	46

Handwritten calculations for question 11:

$$\bar{x} = 31.375$$

$$s_x = 22.18$$

$$\text{range} = 59 - 6 = 53$$

$$\text{IQR} = 54 - 10 = 44$$

Delaware has an area of 2,000 square miles. Which is true if Delaware is included in the data set?

Handwritten note: "2 →"

- A. The mean ~~increases~~
- B. The range ~~decreases~~
- C. The interquartile ~~range decreases~~
- D. The standard deviation increases

Handwritten calculations for question 11 with Delaware included:

$$\bar{x} = 28.11$$

$$s_x = 22.85$$

$$\text{range} = 59 - 2 = 57$$

$$\text{IQR} = 54 - 7.5 = 46.5$$

Equations of Lines Review:

Name Answer Key

1) What is the equation of a line that passes through the points below? $(-6, -10)$ $(-4, 0)$
 x_1, y_1 x_2, y_2

$$m = \frac{0 - (-10)}{-4 - (-6)} = \frac{10}{2} = 5$$

$$y = mx + b$$

$$0 = 5(-4) + b$$

$$\begin{array}{r} 0 = -20 + b \\ +20 \quad +20 \\ \hline 20 = b \end{array}$$

$$y = 5x + 20$$

2) Find the equation of the line that passes through the point $(3, 15)$ and is parallel to $y = \frac{4}{3}x + 5$.
 x y

same slope

$$y = mx + b$$

$$15 = \frac{4}{3}(3) + b$$

$$\begin{array}{r} 15 = 4 + b \\ -4 \quad -4 \\ \hline 11 = b \end{array}$$

$$y = \frac{4}{3}x + 11$$

3) Which of the following equations represents a line that is perpendicular to the line that passes through the points below? $(-5, 2)$ $(5, 0)$
 x_1, y_1 x_2, y_2

↑
neg. rec slope

A. $y = \frac{1}{5}x + 4$

B. $y = 5x + 4$

C. $y = -5x + 4$

D. $y = -\frac{1}{5}x + 4$

$$m = \frac{0 - 2}{5 - (-5)} = \frac{-2}{10} = -\frac{1}{5}$$

$$m \perp = \frac{5}{1} \text{ or } 5$$

4) Find the equation of the line that passes through the point $(2, 12)$ and is perpendicular to $y = \frac{2}{3}x + 4$.
 x y

↑ $m \perp = -\frac{3}{2}$

$$y = mx + b$$

$$12 = -\frac{3}{2}(2) + b$$

$$\begin{array}{r} 12 = -3 + b \\ +3 \quad +3 \\ \hline 15 = b \end{array}$$

$$y = -\frac{3}{2}x + 15$$

5) A line segment, ST, has endpoints $S(-5, -5)$ and $T(3, -3)$. Which of the following equations represent the perpendicular bisector of the line segment?
 x_1, y_1 x_2, y_2

A. $y = -4x - 8$

B. $y = 2x - 9$

C. $y = -4x - 16$

D. $y = 8x - 8$

OMIT

6. What is the x-intercept of the equation below?

$$4x - 8y = -16$$

when $y=0$

- A. (0, 2)
- B. (-4, 0)
- C. (2, 0)
- D. (0, -4)

$$4x - 8(0) = -16$$

$$\frac{4x}{4} = \frac{-16}{4}$$

$$x = -4$$

7. What is the y-intercept of the equation below?

$$2x - 8y = 16$$

when $x=0$

- A. (0, 8)
- B. (8, 0)
- C. (-2, 0)
- D. (0, -2)

$$2(0) - 8y = 16$$

$$\frac{-8y}{-8} = \frac{16}{-8}$$

$$y = -2$$

8. Describe the solution to the system of equations below.

$$\begin{array}{r} 4(5x + 2y = 0) \\ 20x + 8y = -72 \\ \hline 20x + 8y = 0 \\ -(20x + 8y = -72) \end{array}$$

$$\begin{array}{r|l} 20x + 8y & = 0 \\ -20x - 8y & = -72 \\ \hline 0 & = -72 \\ 0 & \neq -72 \end{array}$$

NO solution

9. $10x - 4y = -22$
 $5x + 5y = 45$

Using the two equations above, solve for y.

$$\begin{array}{r} 10x - 4y = -22 \\ 2(5x + 5y = 45) \\ \hline 10x - 4y = -22 \\ 10x + 10y = 90 \end{array}$$

$$\begin{array}{r|l} 10x - 4y & = -22 \\ -10x - 10y & = -90 \\ \hline -14y & = -112 \\ -14 & -14 \end{array}$$

y = 8

10. Find the solution to the system of equations below.

$$\begin{array}{r} 4x + y = -27 \\ 4(x + 7y = 0) \\ \hline 4x + y = -27 \\ 4x + 28y = 0 \\ \hline 4x + y = -27 \\ -4x - 28y = 0 \\ \hline -27y = -27 \\ -27 & -27 \end{array}$$

y = 1

$$\begin{array}{r|l} 4x + y & = -27 \\ -1 & -1 \\ \hline 4x & = -28 \\ 4 & 4 \end{array}$$

x = -7

Solution (-7, 1)

Find the solution to the system of equations below.

$$\begin{array}{r} 4x + y = -27 \\ x + 7y = 0 \end{array}$$

11. Repeat of # 10

omit