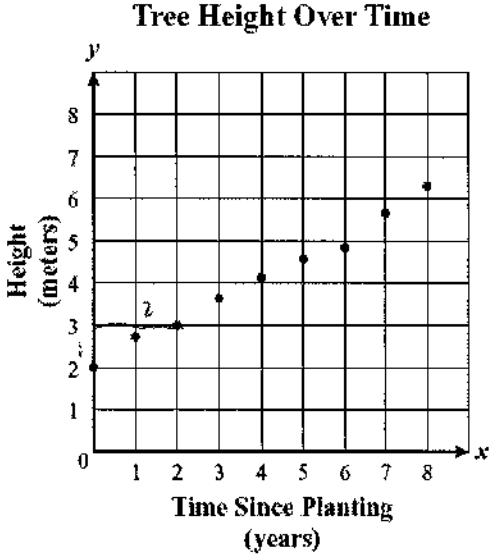
MCA/ACT Math Additional Practice
Statistics

Name: Key

1. Cynthia and her father planted a tree in their front yard 8 years ago. The tree was 2 meters in height when it was planted. The scatterplot below shows how the height of the tree increased each year.



Which of the following most closely approximates the equation of the line of best fit for the data?

A. $y = -2x + 2$
B. $y = 2x + 2$
C. $y = -\frac{1}{2}x + 2$
(D.) $y = \frac{1}{2}x + 2$

2. The equation of the regression line for a student's grade y given the number of times they are tardy x is $y = -5.1x + 97.2$. What would someone's grade be who was tardy 7 times?

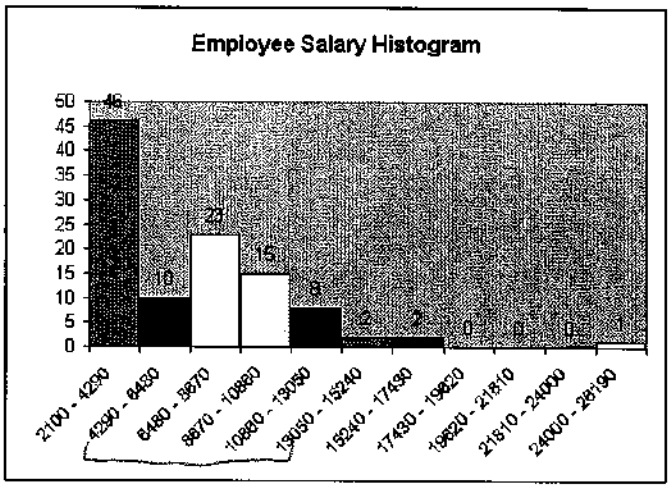
$y = -5.1(7) + 97.2$

$y = \boxed{61.5}$

3. A study of child development measures the age (in months) at which a child begins to talk and also the child's score on an ability test given several years later. The study asks whether the age at which a child talks helps predict the later test score. The least-squares regression line of test score y on age x is $y = 110 - 1.3x$. According to this regression line, what happens (on the average) when a child starts talking one month later?

(a) The test score goes down 110 points.
(b) The test score goes down 1.3 points.
(c) The test score goes up 110 points.
(d) The test score goes up 1.3 points.
(e) The test score is 108.7.

4. Use the histogram to the right to answer the following questions.



a. How many employees earned between$4,290 and $13,050?

56

10
23
15
+ 8
56

b. In what class does the median most likely fall?

46
+ 56
2
2
1
107

107 ÷ 2 = 53½

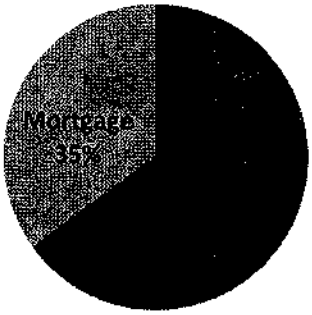
4290-6480

5. The pie graph below shows the expenses of the Taylors family in a particular month. If the Taylors spent $600 on food, how much did they spend that month on clothing?

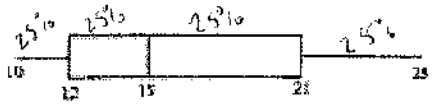
35
+30
65

100
- 65
35% Clothing

600 · (.35)
= 210



6. The box and whisker plot shown below represents a class's scores on a statistics quiz.



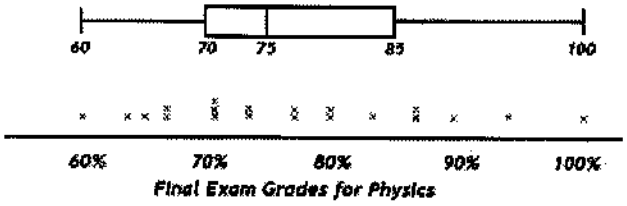
Which of the following statements is false?

a. Half of the students scored between 12 and 21.
b. The median score was 15.
c. A score of 21 is at the 75th percentile.
d. More students scored between 15 and 21 than any other quartile.
e. 25% of the students scored below 12.

7. What is the interquartile range of the data shown in the boxplot?

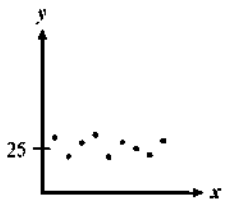
85 - 70

15

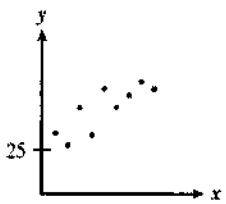


8. Which of the following scatterplots shown below would be best represented by a line of best fit with the equation: $y = 25$

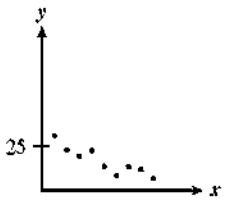
A.



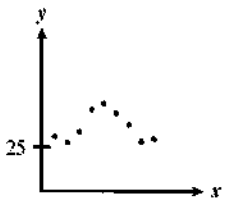
C.



B.



D.



9. Find the 5 number summary (minimum, lower quartile, median, upper quartile, maximum) of the following data:

11	7	11	12	10	6	9	11	5	13	2

2 5 6 7 9 10 11 11 11 12 13

min LQ Med UQ max

Min = 2
LQ = 6
Med = 10
UQ = 11
Max = 13

10. The heights (in inches) of the members of a soccer team are listed below.

66, 61, 71, 62, 64, 70, 64, 68, 72, 68

After a new member joined the team, the median height of all members was 66 inches. Which of the following could be the height of the new member?

A. 68 inches
B. 65 inches
C. 64 inches
D. 61 inches

61, 62, 63, 64, 64, 66, 68, 70, 71, 72

11. Find x and y so that the ordered data set has a mean of 42 and a median of 35.

17, 22, 26, 29, 34, x, 42, 67, 70, y

$\frac{17+22+26+29+34+36+42+67+70+y}{10} = 42$

med = 35

$x = 36$

$343 + y = 420$

$y = 77$

12. Which of the following statements, related to the mean, mode and median of the data set given below is true?

12, 15, 10, 19, 5, 5

5, 5, 10, 12, 15, 19

(A) The mean is equal to the median
B. The mode is larger than the mean
C. The median is smaller than the mode
D. The above data set has two modes
E. The median of the above data is equal to 14.5

mean = $66/6 = 11$

median = 11

mode = 5

13. Tyrone calculated the mean, median, mode and range of the following data set:

1, 2, 5, 5, 5, 8, 11, 13

Then he realized that a data point of "2" was missing from the original data set. The corrected data set is shown below.

1, 2, 2, 5, 5, 5, 8, 11, 13

When Tyrone accurately recalculates the statistics, which measure will change?

(A) mean
B. median
C. mode
D. range

14. Jason and Eric discovered that the means of their grades for the first marking period in their math class were identical. They also noticed that the standard deviation of Jason's grades is 20.7 while the standard deviation of Eric's grades is 2.7. Which statement must be true?

A. In general, Eric's grades were lower than Jason's grades.
(B.) Eric's grades are more consistent than Jason's grades.
C. Eric had more failing grades during the marking period than Jason had.
D. The median for Eric's grades is lower than the median for Jason's grades.

15. Which of the following data sets has the largest standard deviation?

A. {1, 2, 3, 4, 5}
B. {2,3, 3, 3, 4}
C. {2, 2, 2, 4, 5}
D. {0, 2, 3, 4, 6}
(E) {-1, 1, 3, 5, 7}

16. The number of children of each of the first 41 United States presidents is given in the accompanying table. For this population, determine the mean and the standard deviation to the nearest tenth.

Number of Children (x_i)	Number of Presidents (f_i)
0	6
1	2
2	8
3	6
4	7
5	3
6	5
7	1
8	1
10	1
15	1

mean = $\frac{6(0)+2(1)+8(2)+6(3)+7(4)+3(5)+5(6)+7+8+10+15}{41}$

$= \frac{149}{41} =$ 3.6 children

SD = 2.93

17. The following table gives the 2011 regular season win-loss record of all the NFC teams in the National Football League.

National Football Conference - 2011 Regular Season

	NFC Team	Div	W	L	T	Pct	PF	PA
16	1. *- Green Bay Packers	NCN	15	1	0	.938	560	359
15	2. z- San Francisco 49ers	NCW	13	3	0	.813	380	229
14	3. z- New Orleans Saints	NCS	13	3	0	.813	547	339
13	4. y- Atlanta Falcons	NCS	10	6	0	.625	402	350
12	5. y- Detroit Lions	NCN	10	6	0	.625	474	287
11	6. z- New York Giants	NCE	9	7	0	.563	394	400
10	7. Chicago Bears	NCN	8	8	0	.500	353	341
9	8. Arizona Cardinals	NCW	8	8	0	.500	312	348
8	9. Philadelphia Eagles	NCE	8	8	0	.500	396	328
7	10. Dallas Cowboys	NCE	8	8	0	.500	369	347
6	11. Seattle Seahawks	NCW	7	9	0	.438	321	315
5	12. Carolina Panthers	NCS	6	10	0	.375	406	429
4	13. Washington Redskins	NCE	5	11	0	.313	288	387
3	14. Tampa Bay Buccaneers	NCS	4	12	0	.250	287	494
2	15. Minnesota Vikings	NCN	3	13	0	.188	340	449
1	16. St. Louis Rams	NCW	2	14	0	.125	193	407

rank ↑

a. Find the percentile of the number of wins for the Minnesota Vikings.

Rank (lowest to highest)

$\frac{2}{16} = 12.5 =$ 13th percentile

b. What team was at the 81st percentile?

$(.81)(16) = 12.96$

ranked #13 (lowest to highest)

Atlanta Falcons

18. 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?

yes

19. 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?
    a. mean
    b. mode
    c. median
    d. range

20. Which situation should be analyzed using bivariate data?
    a. Ms. Saleem keeps a list of the amount of time her daughter spends on her social studies homework.
    b. Mr. Benjamin tries to see if his students' shoe sizes are directly related to their heights.
    c. Mr. DeStefan records his customers' best video game scores during the summer.
    d. Mr. Chan keeps track of his daughter's algebra grades for the quarter.