Algebra 2
Statistics Test Review

Name: KEY
Date: _____

Determine whether the situations are biased or unbiased and *explain* your answer. If it is biased, explain how it could be changed to be unbiased.

1. A student wants to know how many students in school have ever be in a school musical. She surveys the members from the theater club.

Biased or unbiased? BIASED

Explain:
SURVEYING STUDENTS ONLY FROM GROUP

If biased, how can you change it be unbiased? SHE CAN SURVEY EVERY 10TH STUDENT THAT ENTERS THE BUILDING IN THE MORNING

Determine whether each is a survey, observational study, or experiment and *explain* your answer. Identify the treatment in each.

2. A pharmacologist is testing whether a new weight loss medication, EatLess, will cause people to actually ~~gain~~ lose weight. To test this, she gives 100 people EatLess, for one month and 100 people a placebo drug. At the end of the month, she monitors any weight gain.

Type of study: EXPERIMENT Treatment: 100 INDIVIDUALS GIVEN "EATLESS"

Explain type of study: GIVING A TREATMENT TO ONE GROUP

Can we determine cause and effect? (circle one) (YES) NO

3. The manager of a candy store in downtown Carpentersville is interested in assessing customer opinions about adding new candy on its shelves. The manager is planning to conduct a sample survey of the customer population.

Which of the listed methods of sample selection would be most efficient at reducing bias?

A. Post the survey on the store Web site, and use the first 30 surveys that are submitted.

(B.) Randomly select 30 customer surveys submitted throughout the week.

C. Randomly select one day of the week, and then select the first 30 customers who enter the store after 12pm.

D. Randomly select one day of the week, and then select the first 30 customers who enter the store that day.

4. Daily high temperatures in degrees Fahrenheit.

63	70	64	71	70	70	62	68	67	68	72	65	62	59	58	60
59	56	53	51	55	56	50	53	57	55	50	46	49	46	52	48

a. Complete the table shown at the right.

b. Find the mean of the data.

$\frac{1885}{32} = 58.91$

c. Find the standard deviation of the data.(Use your calculator) 7.95 → STANDARD DEVIATION

d. Identify all scores that are more than one standard deviation from the mean.

58.91 − 7.95 = 50.96

58.91 + 7.95 = 66.86

[50.96, 66.86]

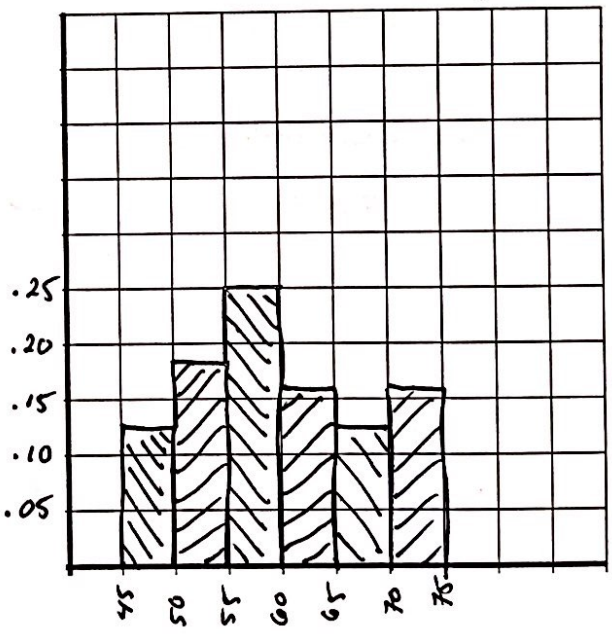
50, 50, 46, 49, 46
48, 70, 71, 70, 70
68, 67, 68, 72

Frequency table:

Interval	# of values	
40-44		0
45-49	1111	4
50-54	1111 1	6
55-59	1111 111	8
60-64	1111	5
65-69	1111	4
70-74	1111	5

e. Calculate the relative frequencies and fill in the table. Then draw a **RELATIVE frequency** histogram using the table you just completed. Describe the shape of the data below.

Interval	Relative Frequency
40-44	0
45-49	.125
50-54	.1875
55-59	.25
60-64	.15625
65-69	.125
70-74	.15625

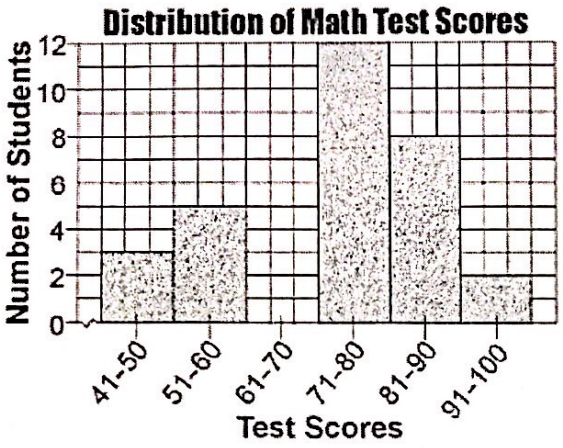


f. Based on your graph above, which measure of center, mean or median, is a better measure of center. (circle one)

Mean = 58.91 Median = 58.5 Mode = 70

Explain: MEAN

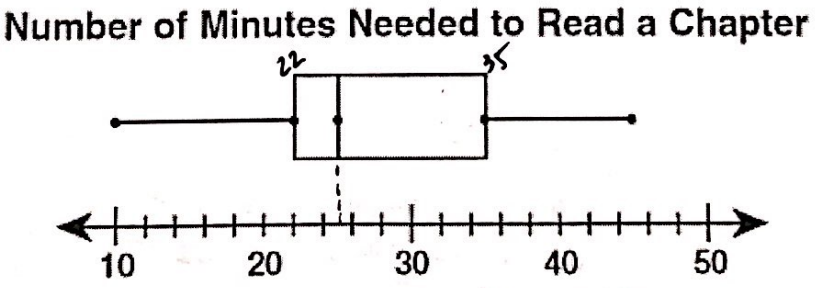
5. The graph below shows the distribution of scores on a mathematics test. Complete the frequency table using the data from the histogram shown.



Test Scores	Frequency
91-100	2
81-90	8
71-80	12
61-70	0
51-60	5
41-50	3

Use the following to answer questions 6-8:

The following is a boxplot of the number of minutes it takes students to read a chapter in their English class.



6. The median time is approximately: 25 24.5 MINUTES

7. About 75% of the students spend above how many minutes reading a chapter: 22 MINUTES

8. What is the interquartile range of the box plot above? 13

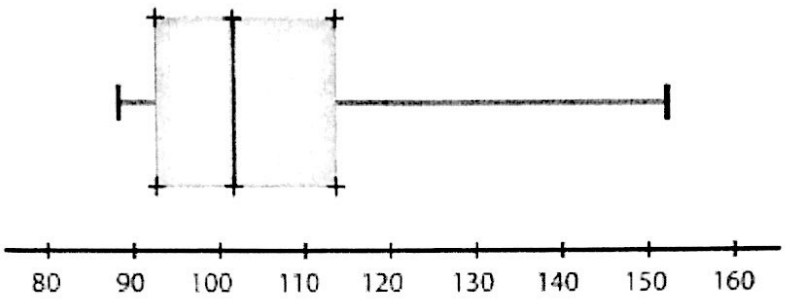
35 - 22 = 13

Q3 - Q1

Use the following box plot to answer the questions:

The following is a boxplot of the number of Television Sales at a local televisión company.

Television Sales



9. The approximate lowest value is: 88

10. The median number of television sales is: 101

11. About 25% of the TV sales were less than what value? 92

12. Refer to the table below. It shows the average life span of 21 mammals. Find the information listed below and then make a box plot of the data.

Minimum: 1

Q1: 5

Median: 8

Maximum: 35

Q3: 12

Outliers: $5 - 10.5 = -5.5$

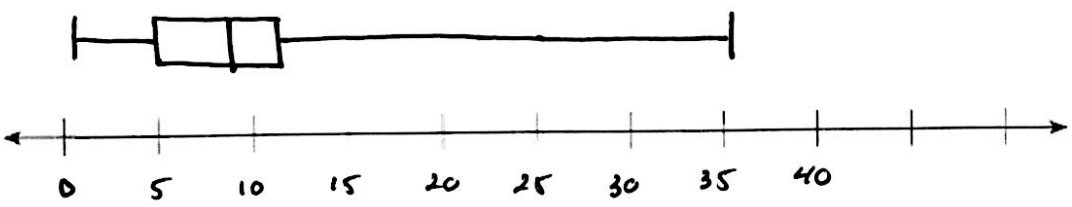
$12 + 10.5 = 22.5$

35 OUTLIER

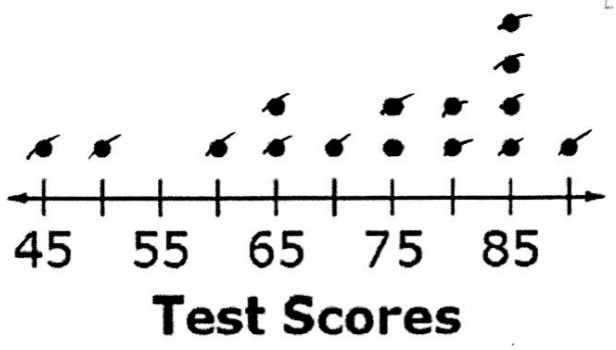
MEDIAN

Life Span (yr)				
~~5~~	~~12~~	~~4~~	~~3~~	~~12~~
~~12~~	~~6~~	~~5~~	~~8~~	35
~~7~~	~~8~~	~~12~~	~~10~~	~~12~~
~~10~~	~~3~~	~~7~~	~~1~~	~~12~~
~~10~~				

1 3 3 4 5 5 6 7 7 8 8 10 10 10 12 12 12 12 12 12 35



13. The dot plot below displays data for the test scores of Mrs. Hanson's geometry class.



a. How many students took the test? 15

b. What is the median of the data? 75

c. What percent of the students scored a 75 or higher? $\frac{9}{15} = \frac{3}{5} = .6 = 60\%$

d. What is the average test score? *(1/2 point)* $73\% : \frac{1095}{15}$

e. Is the data distribution symmetrical or skewed? SKEWED

How do you know? MORE DATA POINTS ON ONE SIDE

14. The following data shows the amount of chocolate Mrs. Riley ate over the last 30 days. Create a dot plot to show how much chocolate she ate.

3, 5, 9, 2, 4, 5, 3, 8, 7, 4, 7, 8, 7, 1, 2, 2, 5, 7, 12, 8, 3, 7, 9, 2, 1, 1, 4, 3, 8, 11