Lesson Notes and Resources Available on Teacher's Website

9.1 Introduction to Statistics (online textbook pgs. 390-395)

A) Tell whether the question is a statistical question.

How many pages are in the favorite books of your classmates?

How do you know?

B) Tell whether the question is a statistical question.

At what temperature (°F.) does water freeze?

How do you know?

C-D) Display data in a dot plot.

Test Scores					
85	82	83	90	83	82
83	81	83	84	84	84

Identify any clusters, peaks, or gaps in the data.

E) You conduct a survey to answer: "How many hours does a sixth grade student spend on homework during a school night?"

Hours of Homework											
2	4	3	2	1	2	2	1	2	3	5	2

*Is this a statistical question? Explain

*Display the data in a dot plot. Identify any clusters, peaks, or gaps in the data.

*Use the distribution of the data to answer the question.

F) Sonja is considering questions to ask her friends about sports. Which of the following is not a statistical question?

A. How many different athletic games to you attend in a week?

B. How many hours to you spend practicing a sport in a week?

C. How many soccer players can one team have on a field?

D. How many years have you played sports?

G) "How many letters are in the English alphabet?" is not a statistical question. Write a question about letters that is a statistical question.

Explain your reasoning.

H) A bar graph shows the favorite food of 20 people. Does it make sense to describe the distribution of these data?

Explain.

9.2 Mean (online textbook pgs. 396-401)

A) Find the mean of the data.

Website Visits						
12	16	0	8	31	28	17

B) Is the mean always equal to a value in the data set?

Explain.

C) Find the mean of the data.

Time (minutes)				
4.2	3.5	4.55	2.75	2.25

D) Is this a statistical question? "How long are the commercial breaks during this show?"
(Use the mean of the values from "C" to answer the question.)

E) The 50-yard dash times, in seconds, for several students are shown below.

6.3, 6.7, 6.7, 7.1, 7.2, 7.5, 7.7, 8.1, 8.4

What is the mean time for these students?

A. 6.7

B. 7.2

C. 7.3

D. 8.4

F) Identify the outlier in the set of data.

Flight Prices from Miami, Florida to Canton, Ohio					
$456	$512	$516	$900	$436	$516

Find the mean with and without the outlier.

Describe how the outlier affects the mean.

G) The table shows the number of text messages send by a group of friends over 1 week. What was the mean number of messages sent?

Text Messages Sent						
Matt	Lana	Sue	Joe	Ken	Mary	Xan
125	100	106	130	87	113	95

H) Identify the outlier in the set of data.

Weights (in pounds) of dogs at a kennel.						
48	50	55	60	8	37	50

Find the mean with and without the outlier.

Describe how the outlier affects the mean.

9.3 Measures of Center (online textbook pgs. 402-409)

A-B) Find the mean, median, and mode of the data.

2, 8, 10, 12, 56, 9, 5, 2, 4

Explain which measure best represents the data.

C-D) Find the mean, median, and mode of the data.

126, 62, 144, 81, 144, 103

Explain which measure best represents the data.

E-F) The heights, rounded to the nearest foot, of the trees in a park are listed below.

23	13	8	52	26	42	48	52

What is the median of the tree heights?   Find the mean of the data:

A. 33 feet

B. 34 feet   Find the mode of the data:

C. 39 feet

D. 44 feet

G) At batting practice, 10 batters were each thrown 20 pitches. The numbers of pitches the batters hit are shown below.

  5, 16, 8, 8, 11, 7, 3, 6, 4, 2

What is the median number of pitches that the batters hit?

How do you know?

H) Explain why do you think the mode is the least frequently used measure to describe a data set?

9.4 Measures of Variation (online textbook pgs. 412-417)

A) Find the range of the data.	B) Explain how an outlier affects the range of a data set.
133, 117, 152, 127, 168, 146, 174	

C-D) Find the median, first quartile, third quartile, and interquartile range of the data.

38, 55, 61, 56, 46, 67, 59, 75, 65, 58

E-F) The tables show the ages of the finalists for two reality singing competitions.
Find the mean, median, range, and interquartile range of the ages for each show.

Ages for Show A									
18	15	22	18	24	17	21	16	28	21

Ages for Show B									
21	23	15	17	36	20	13	18	22	25

Compare the results.

G) The table shows the numbers of points scored by players on a basketball team.	H) Use the table in G to answer.
	Use the interquartile range to identify the outlier(s) in the data set. Find the range and the interquartile range of the data set without the outlier(s). Which measure did the outlier(s) affect more?

Points Scored					
21	53	74	82	84	93
103	108	116	122	193	

Find the range and the interquartile range of the data.

How do you know?

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9.5 Mean Absolute Deviation (online textbook pgs. 418-423)

A) Find the average distance each data value in the set is from the mean. (Round to tenth if necessary.) **2010, 2002, 2005, 2007, 2001**	B) Find the average distance each data value in the set is from the mean. (Round to tenth if necessary.) **7, 20, 9, 35, 12, 15, 7, 10, 20 ,25**

C-D) Find and interpret the mean absolute deviation of the data. (Round to tenth if necessary.)

Prices of Microphones (in dollars)

25	28	20	22	32	28	35	34	30	36

E-F) The table shows the prices of the five most-expensive and least-expensive dishes on a menu.

Five Most-Expensive Dishes

$28	$30	$28	$39	$25

Five Least-Expensive Dishes

$7	$7	$10	$8	$12

Find the MAD of each data set.

Then compare their variations.

G) The ages of ten employees at an insurance company are as follows. **43, 42, 51, 38, 52, 42, 21, 37, 47, 47** What is the mean absolute deviation of the ages? A. 6 B. 10 C. 31 D. 42	H) The data set shows the admissions prices at several museums. **$20, $20, $16, $12, $15, $25, $11** Find and interpret the range, interquartile range, and mean absolute deviation of the data.

10.1 Stem and Leaf Plots (online textbook pgs. 434-439)

A-B) Make a stem-and-leaf plot of the data.

Books Read											
26	15	20	9	31	25	29	32	17	26	19	40

C-D) Make a stem-and-leaf plot of the data.

Hours Online										
8	12	21	14	18	6	15	24	12	17	2

E-F) Coach Jansen records the number of miles each of his 10 students ran last week. Some information about the numbers of miles is listed below.

- The **mean** number of miles run by the students is 5.
- The **median** number of miles run by the students is also 5.

Which line plot could show the numbers of miles the 10 students ran last week?

A.

Number of Miles

B.

Number of Miles

C.

Number of Miles

D.

Number of Miles
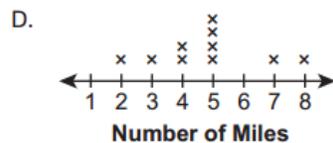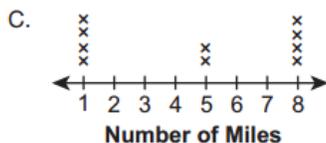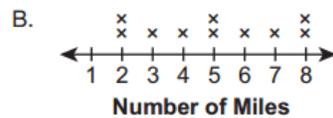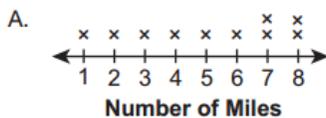
G-H) Malik interviewed 20 people who each have just one sibling. He asked them what the difference in age, in years, is between them and their siblings. The line plot below shows Malik's data.

Difference in Age of Siblings

Difference in Age (years)
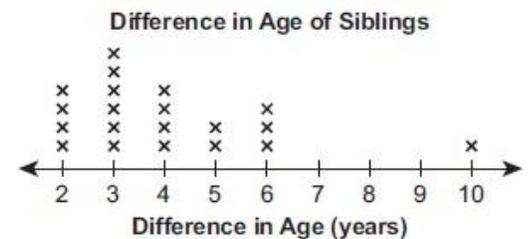
Malik removes the point representing the 10-year age difference from his data. Which measure changes the **least** in value when this point is removed from Malik's data.

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

How do you know?

10.2 Histogram (online textbook pgs. 440-447)

A-B) Make a tally table of the data in intervals.

Members of Book Clubs											
6	17	13	19	13	9	18	24	11	15	21	14

C-D) Display the data in histogram.

Chess Team				
Wins	10-13	14-17	18-21	22-25
Frequency	3	4	4	2

E-F) The histogram below represents the weights, rounded to the nearest pound, of several orders of dog food.

Which statement best describes the weights of the orders represented in the histogram?

Dog Food Orders

A. The orders cluster near 20 pounds.

B. The orders are symmetrical about 8 pounds.

C. There is a gap in the orders from 11 to 15 pounds.

D. There is a peak in the orders from 6 to 10 pounds.

How do you know?
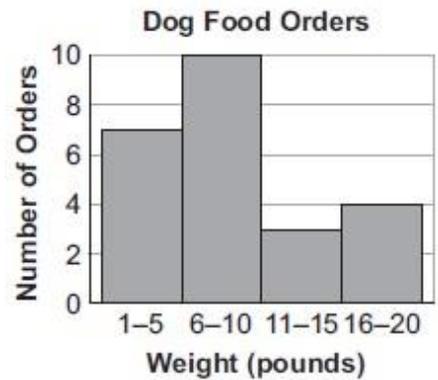
G) How can you tell when an interval of a histogram has a frequency of zero?

H) Select intervals and make a tally chart. Then display data in a histogram.

Points Scored							
42	45	57	39	55	38	48	36
48	46	51	29	45	54	42	

10.4 Box and Whisker Plots (online textbook pgs. 458-465)	
A-B) Make a box-and-whisker plot for the data. Quiz scores 8, 12, 9, 10, 12, 8, 5, 9, 7, 10, 8, 9, 11	C-D) Make a box-and-whisker plot for the data. Ages of teachers 30, 62, 26, 35, 45, 22, 49, 32, 28, 50, 42, 35

E-F) A data set contains eight numbers. Only four of the numbers are known.

19.2 _____ _____ 20.4 26.0 _____ _____ 30.8

Which box-and-whisper plot could represent the data set?

A.

18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

B.

18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

C.

18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

D.

18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
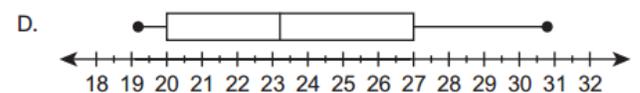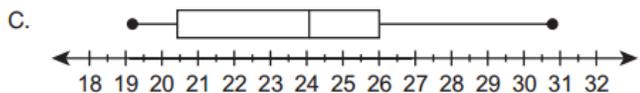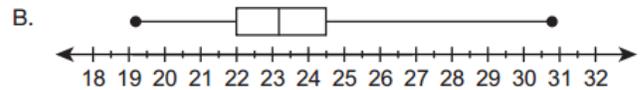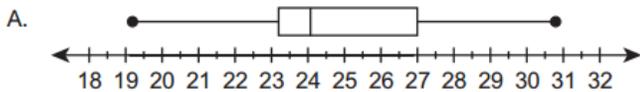
G) The box-and-whisker plot shows the distances students traveled (in miles) during spring break.

Distances Traveled on Spring Break

0   40   80   120   160   200   240   280   320   360   400
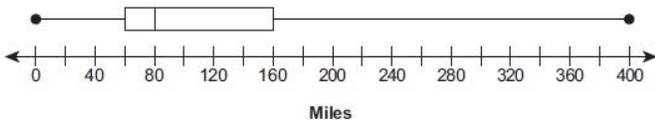
Miles

Which statement must be true?

   A. The median distance traveled is 80 miles.

   B. The median distance traveled is 200 miles.

   C. The mean distance traveled is 80 miles.

   D. The mean distance traveled is 200 miles.

How do you know?

H) The box-and-whisker plot represents the closing times of businesses in a town. What percent of the businesses close at 10 P.M. or later?

5 P.M.   7:30 P.M. 9 P.M. 10 P.M.   12 A.M.

4 P.M.   6 P.M.   8 P.M.   10 P.M.   12 A.M.

Closing Time
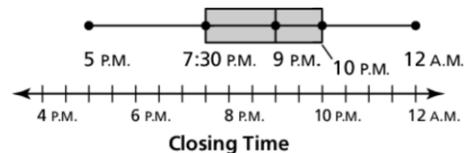
A. 20%

B. 25%

C. 50%

D. 75%

How do you know?

10.3 Shapes of Distribution (online textbook pgs. 450-455)

A-B) Make a dot plot of the data.

Raffle Tickets Sold							
15	12	16	15	13	14	16	13
13	16	14	12	15	12	14	

In your own words, how would you describe the shape of the distribution?

C) How does the shape of a symmetric distribution differ from the shape of a skewed distribution?

D) For a distribution that is skewed right, which direction does the tail extend?

Where do most of the data lie?

E-F) The bar graph below shows how many questions various percentages of students in a class answered correctly on a recent 10-question quiz.

Percentage of Questions Answered Correctly
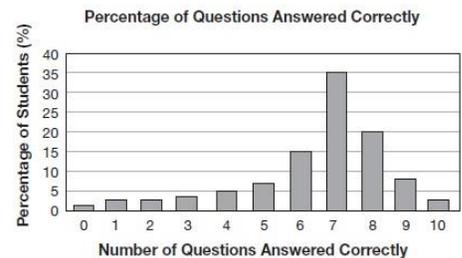
Which statement **best** describes the data displayed in the bar graph?

    A. Half the class answered from 0 to 5 of the 10 questions correctly.

    B. Most of the students answered approximately 35% of the quiz questions correctly.

    C. The number of quiz questions answered correctly is clustered around 7 out of 10.

    D. The percentage of students increases as the number of questions answered correctly increases.

G) The table below shows the ages of various pieces of equipment in an office.

Ages (in years)									
1	2	3	5	8	1	2	3	5	9
1	2	4	7	9	2	3	4	7	10

Display the data in a dot plot.

Identify any clusters, peaks, or gaps in the data.

H) Use the information from E.

Find the mean, median, and mode(s) of the data.

Choose the measure that best represents the data.

Explain your reasoning.