Statistics and Probability

Modeled Instruction

DIRECTIONS: Read each question and choose the best answer. Use the answer sheet provided at the end of the workbook to record your answer. If the correct answer is not available, mark the letter for "Not Here."

1. Which question is likely to show statistical variability in its answer?

   A How many seconds are equivalent to one minute?

   B What is the sum of 5 and 4?

   C How many months of the year begin with the letter a?

   D On what day of the week was a person born?

   Hint

   A statistical question is a question about a set of data that can vary. To answer a statistical question, you need to collect or look at a set of data. If the answer to a question will always be the same, it is not a statistical question.

2. A sales manager oversees the sale of cars at his car lot. Which of the following questions does NOT show variability in its answer?

   F How many cars does he sell each week?

   G How many customers does he talk to each week?

   H How many cars did he sell yesterday?

   J How many phone calls does he make each day?

   Hint

   Look for a question where the answer will not vary. For example, the number of cars he sells each week can change from week to week, so it is a statistical question.

3. What is a statistical question that could be asked about the data shown in this table?

| Trail Lengths	
Trail	**Length (miles)**
Pinkney	1.75
Armstead	2.34
Oak	1.69

A How many people hiked each trail in one week?

B In what state is the shortest trail?

C How much longer is the Pinkney Trail than the Oak Trail?

D How many miles long is the Armstead Trail?

Hint

Make up a possible answer for each question. Which answer will have variability?

4. Mr. Cruz used a dot plot to display the number of questions that each student answered correctly on the math quiz. Which statement describes the data?

Math Quiz

Number of Answers Correct
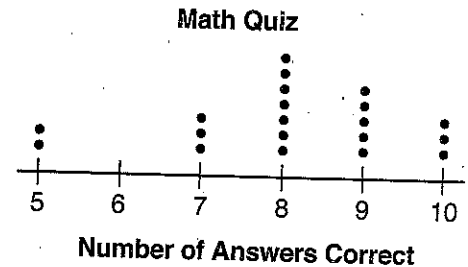
F There is a cluster from 5 to 7.

G The median of the data is 7.5.

H The mode of the data is 8.

J There is a gap at 7.

Hint

Start by eliminating the answer choices that you know are not true. Since most of the data on the dot plot is 8 or greater, you know that the median cannot be less than 8.

Name _____ Date _____

Use this histogram to answer questions 5 and 6.

Minutes Spent Cleaning Rooms
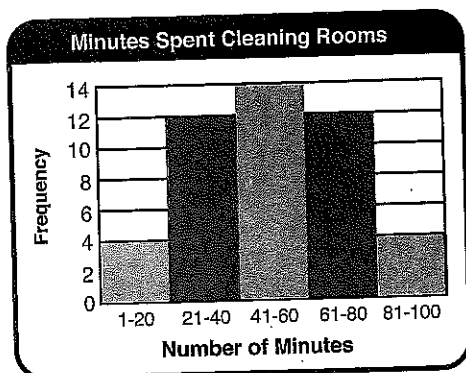
5. This histogram shows the number of minutes that sixth-graders spend cleaning their rooms each week. Which statement does NOT describe the data correctly?

A There are no gaps.

➤ There is one peak at interval 61–80.

C The graph has symmetry.

D Most students spend 60 minutes or less cleaning their rooms.

6. In which interval would you find an estimate of the median?

F 1–20

G 21–40

H 41–60

J 81–100

7. Which of the following is a measure of variation?

A mean

B median

C mode

D range

Name_____ Date_____

Use this table of data to answer questions 8 and 9.

Prices of MP3 Players	
Electronic City	$24.00, $108.00, $30.00, $44.00, $62.00, $80.00
Best Electronics	$69.00, $42.00, $120.00, $59.00, $66.00, $76.00

8. What is the mean price of Best Electronics MP3 players?

   F 58   G 65   H 72   J 80

Hint

You can find the mean of a set of data by adding all the values and dividing the sum by the number of values in the data set. Be sure to find the mean for Best Electronics.

9. The prices of MP3 players at Electronic City and Best Electronics are shown in the table. Which statement is true?

A The range of the prices at Electronic City is greater than the range of the prices at Best Electronics.

B The variation between the prices at each store is the same.

C The mean price at Electronic City is greater than the mean price at Best Electronics.

D The median price at Electronic City is greater than the median price at Best Electronics.

Hint

You need to compute the mean, median, and range for each store. Then compare the results to answer the question.

10. Paloma sells fruit and vegetables at the farmer's market. This dot plot shows the number of pounds she sells each day. What is the most common number of pounds that Paloma sells?
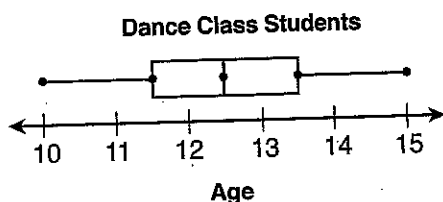

Produce Sold (pounds)
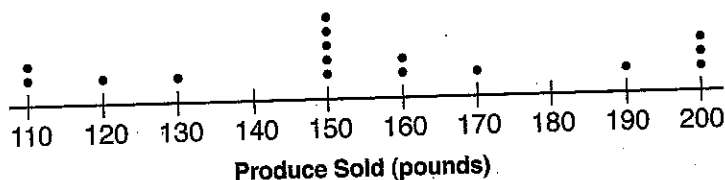
F 110 pounds   G 150 pounds   H 160 pounds   J 200 pounds

Hint

You are looking for the data point that appears most often. That means the number with the most dots over it. This number is called the mode.

---

11. The box plot displays data for the ages of students in dance class. What is the median of the data?
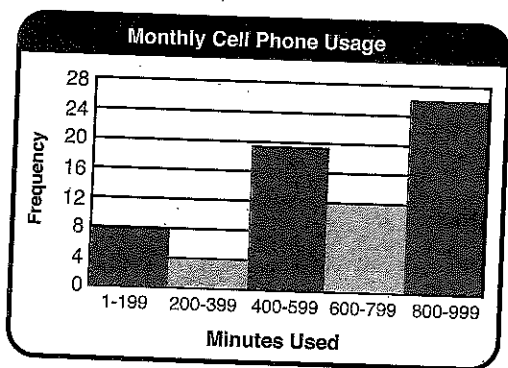
Dance Class Students

Age

A 10

B 15

C 12.5

D 13.5

Hint

On a box plot the median is the dot that is halfway between the lowest and highest values. Medians are not always whole numbers.

Name _____

Date _____

12. This histogram shows the monthly cell phone usage of customers with a family plan. Which group of minutes is used by the greatest number of customers?

Monthly Cell Phone Usage

F   0–199

G   400–599

H   600–799

J   800–999

Hint

It makes sense that the highest bar represents the greatest number of customers.

Use this table of data to answer questions 13 and 14.

Monthly Electricity Usage (kilowatt-hours)		
917 kWh	1,129 kWh	1,007 kWh
837 kWh	983 kWh	924 kWh

13. The table shows data collected by an electricity supplier. What attribute is being measured?

A   monthly electricity usage

B   kilowatt-hours

C   electricity meter

D   time

Hint

The labels of tables can often tell you what is being measured by the data. Look for the most complete answer.

14. What is the unit of measure for the data set?

F   hours

G   inches

H   days

J   kilowatt-hours

Hint

An electricity meter measures electrical usage. What is the name of the unit of measure you usually see on your electric bill?

Statistics and Probability
Higher Scores on Math, Grade 6

Use this table of data to answer questions 15 and 16.

Heights of Television Towers (meters)			
457	502	498	526
678	619	564	642

15. What attribute is being measured?

A   number of towers

B   heights of television towers

C   number of televisions

D   Not Here

Hint

Always look at the table label to decide what the data are describing.

16. How many observations are in the data set shown in this table?

F   2

G   4

H   6

J   8

Hint

Each number is an observation. The total number of values is the total number of observations.

17. Every day for one week, Keller recorded the number of customers who bought blueberry muffins at his cafe. The customer counts are 13, 8, 12, 15, 11, 20, and 19. What is the mean of the data?

A   11

B   12

C   13

D   14

Hint

Remember that to find the mean you add all the data values and divide by the number of data items. This will give you the mean number for the complete data set.

18. Todd and his friends collect coins. The numbers of coins in their collections are 45, 73, 86, 24, 57, 100, 58, 86, 68, and 74. What is the median of the data?

F   67.1

G   70.5

H   76

J   15

Hint

Remember that to find the median you must first write all the data values in consecutive order from least to greatest. Then you can mark off data values from each end of the list until you have one center value or two center values. If there are two center values, find the mean.

19. Michelle recorded the number of customers who bought plain bagels at her bakery each day for one week. The customer counts are 15, 7, 6, 9, 10, 12, and 11. What is the range of the data?

A   6

B   9

C   10

D   15

Hint

Remember that to find the range of a set of data, you must subtract the least (smallest) data value from the greatest data value. The difference is the range of the data.

20. The dot plot shows the number of history books borrowed from the library each day during a 10-day period. The mean of the number of books borrowed each day is 8. What is the mean absolute deviation?

History Books Borrowed

**Number of Books**
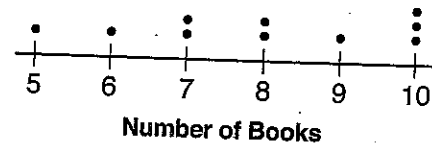
F   14

G   10

H   1.5

J   1.4

Hint

The mean absolute deviation tells how far away the data values are from the mean.

First: Make a list of all the distances and how far away they are from the mean.

Second: Find the mean of the distances by finding the sum of the distances and dividing by 10 because there are 10 data values. The quotient is the mean absolute deviation.

Use this box plot to answer questions 21 and 22.

Number of Laps Completed
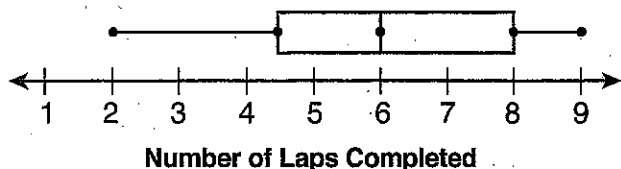
21. The box plot shows the number of laps completed on a track. What are the lower and upper quartiles?

A 4.5, 8

B 4.5, 6

C 6, 8

D 2, 9

Hint

The median of the data is 6. The lower quartile is the median of the lower half of the data. The upper quartile is the median of the upper half of the data.

22. What is the interquartile range?

F 1.5

G 2

H 3.5

J Not Here

Hint

A measure of variability is a single number that describes how far apart the numbers are in a data set. Interquartile range is a measure of variability. To find the interquartile range, subtract the lower quartile from the upper quartile.

23. The prices of karaoke machines at 6 different stores are $77.00, $85.00, $78.00, $72.00, $80.00, and $245.00. What is the outlier in the data set?

A $74.00

B $79.00

C $85.00

D $245.00

Hint

Sometimes a data set contains a number that is much less or much greater than the rest. This number is called an outlier.

24. The amounts of money Gillian earned each week from babysitting are $5.00, $10.00, $20.00, $10.00, $15.00, $5.00, $42.00, and $5.00. How is the mean of the data set affected when the outlier is removed?

F The mean is unchanged.

G The mean increases by $4.00.

H The mean decreases by $4.00.

J The mean increases by $1.00.

Hint

Outliers can affect the mean. Find the mean with and without the outlier to see how it changes.

Statistics and Probability

25. Vishal compared the prices of a video game at several different stores. The prices are $43.00, $64.00, $38.00, $36.00, $37.00, $34.00, and $28.00. Which measure of center best describes the prices?

A median

B mode

C mean

D range

Hint

Notice that most prices are in or near the thirties. Remember that outliers affect the mean rather than the median.