MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) The variable "weight of a car" is 1) _____
A) Categorical B) Numerical

2) The variable "hair color of Dr. Brown's grandchildren" is 2) _____
A) Numerical B) Categorical

3) The variable "social security number of Georgia citizens" is 3) _____
A) Numerical B) Categorical

4) The variable "Annual Income of CEOs in New Tork State" is 4) _____
A) Categorical B) Numerical

5) The variable "Gross Domestic Product per Capita of World Countries" is 5) _____
A) Numerical B) Categorical

6) The variable "Do You Like Icecream?" is 6) _____
A) Categorical B) Numerical

7) The variable "Birth Weight of US Children" is 7) _____
A) Numerical B) Categorical

Identify which of these types of sampling is used: simple random, stratified, systematic, or convenience.

8) 49 students are selected at random from the Sophomore class, 39 from the Junior class, and 48 from the Senior classes. 8) _____
A) Systematic B) Convenience C) Stratified D) Simple random

9) To avoid working late, a quality control analyst simply inspects the first 100 items produced in a day. 9) _____
A) Simple random B) Convenience C) Systematic D) Stratified

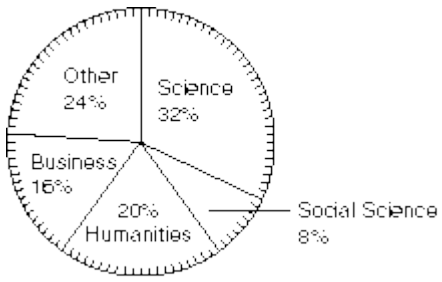
10) A pollster uses a computer to generate 500 random numbers, then interviews the voters corresponding to those numbers. 10) _____
A) Convenience B) Systematic C) Simple random D) Stratified

11) A researcher wants to survey academic performance of high school students in Spain. The researcher divides the entire population into different cities, selects a subgroup of the cities and take a random sample in each city selected. 11) _____
A) Convenience B) Cluster C) Stratified D) Systematic

12) The name of each contestant is written on a separate card, the cards are placed in a bag, and three names are picked from the bag. 12) _____
A) Systematic B) Simple random C) Stratified D) Convenience

Interpret the pie chart.

13) Intended major of high school students. **What is the most popular major?** 13) _____



A) Other B) Science C) Humanities D) Business

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

14) The frequency chart below show the ages of 25 patients who suffered strokes . What percentage who had strokes were in the 45–49 age range? 14) _____

Age	Freq.	Relative Freq.	Cumulative Freq.
45–49	____	____	____
50–54	2	0.08	7
55–59	5	0.20	12
60–64	3	0.12	15
65–69	2	0.08	17
70–74	3	0.12	20
75–79	2	0.08	22
80–84	3	0.12	25
Total	25	1.00	25

15) The frequency chart below show the ages of 25 patients who suffered strokes . What percentage had there strokes after the age of 69? 15) _____

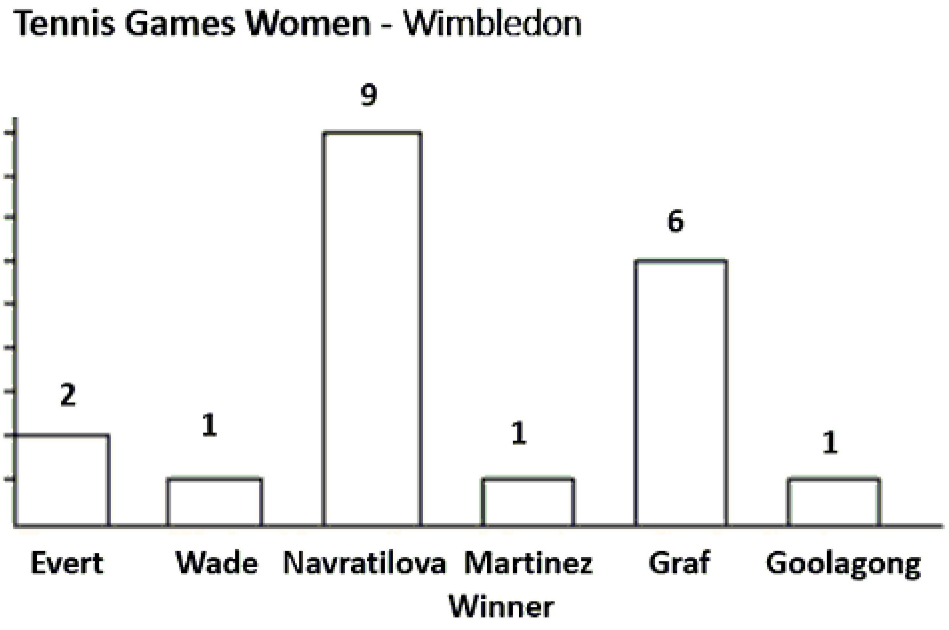
Age	Freq.	Relative Freq.	Cumulative Freq.
45–49	____	_____	____
50–54	2	0.08	7
55–59	5	0.20	12
60–64	3	0.12	15
65–69	2	0.08	17
70–74	3	0.12	20
75–79	2	0.08	22
80–84	3	0.12	25
Total	25	1.00	25

16) The table lists the winners of the Wimbledon women's singles title for the years 1976–1995. Construct a vertical bar graph for the given relative frequencies.. 16) _____

a) How many total games did the two top players win?

b) How many total games were won by the women?

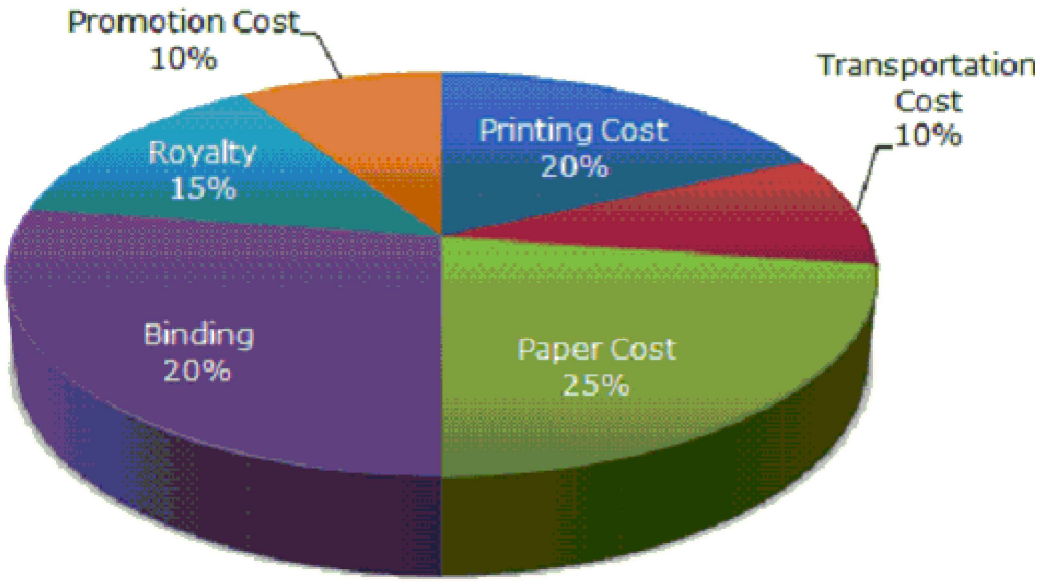
c) What percentage of the games did the top two players win?



17) The pie chart below shows the break down of the costs of printing and selling books for a publishing company. 17) _____

If the total cost for one month's publications is $ 128,500, How much is:

a) The royalty cost ? _____ b) Printing cost? _____



Solve the problem.

18) Last year, nine employees of an electronics company retired. Their ages at retirement are listed below. Find the mean retirement age. Round your answer to the nearest tenth. 18) _____

57 64 59
53 66 58
67 51 54

19) The numbers below represent the amount of precipitation, in inches, on January 1st in eleven different U.S. cities. Find the mean precipitation. Round your answer to the nearest ten–thousandth of an inch. 19) _____

0.152 0.072 0.146 0.099 0.079 0.108
0.151 0.087 0.109 0.131 0.082

Find the median for the given sample data.

20) 6, 7, 11, 21, 30, 30, 49 20) _____
Find the median for the data.

21) A new business had the following monthly net gains: 21) _____

$6402 $1264 $3667 $7635 $7165
$3830 $1037 $8530 $5086 $5758

Find the median net gain.

22) The number of vehicles passing through a bank drive–up line during each 15–minute period was recorded. The results are shown below. Find the median number of vehicles going through the line in a fifteen–minute period. 22) _____

20 22 20 23
23 20 25 22
30 26 26 24
19 26 20 15
10 22 22 22

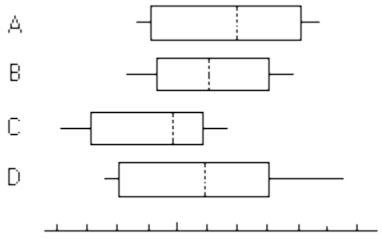
Obtain the five–number summary for the given data.

23) The weights (in pounds) of 18 randomly selected adults are given below. 23) _____

120 145 187 153 119 138
127 142 179 164 182 202
114 174 130 149 167 174

Provide an appropriate response.

24) Four different distributions are represented by the four boxplots below. 24) _____



Which distribution has the smallest median? Which has the greatest variation? Which is skewed to the left?

25) The range and standard deviation of the data set below are 35 and 12.47 respectively. 25) _____

5, 24, 25, 26, 40

If the 26 is replaced with 39, how will this affect the range? How will this affect the standard deviation. Use your answers to explain why the standard deviation is preferable to the range as a measure of variation.

1) B
2) B
3) B
4) B
5) A
6) A
7) A
8) C
9) B
10) C
11) B
12) B
13) B
14) 20%
15) 32%
16) 15, 20, 75%

17) 19,275, 25,700
18) 58.8
19) 0.1105 in.
20) 21
21) $5422.00
22) 22
23) 114, 130, 151.0, 174, 202
24) Distribution C has the smallest median. Distribution D has the greatest variation. Distribution C is skewed to the left.
25) Answers will vary. Possible answer: The range will be unaffected, while the standard deviation will increase. The standard deviation is preferable as it takes into account the numerical value of all observations while the range depends only on the smallest and largest observations and disregards other observations.