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

Solve the problem.

1) For the study described below, identify the population.

1500 American women working for large companies were polled to determine the percentage that felt that women were underrepresented in management positions in their company.

A) The percentage of American women working for large companies who feel that women are underrepresented in management positions in their company.
B) All American women
C) All American women working for large companies
D) The 1500 women polled

1  C

2) For the study described below, identify the sample statistic.

A bank manager wants to know the average amount of time customers of his bank have to wait in line. 300 customers were polled and asked their average wait time at the bank.

A) The average wait time for all of the bank's customers
B) The average wait time for the 300 customers polled
C) The percentage of dissatisfied customers among all of the bank's customers.
D) The 300 people polled

2  B

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

3) A market researcher randomly selects 500 drivers under 30 years of age and 500 drivers over 30 years of age.

A) Random
B) Stratified
C) Convenience
D) Systematic

3  B

4) A researcher interviews 19 work colleagues who work in his building.

A) Stratified
B) Convenience
C) Systematic
D) Random

4  B

In order to answer the given question, which of the following types of study would be the most appropriate? an experiment without blinding, an experiment with single blinding, an experiment with double blinding, an observational study, or a case-control study?

5) Does smoking elevate blood pressure?

A) Experiment with single blinding
B) Experiment without blinding
C) Experiment with double blinding
D) Observational study
E) Case-control study

5  E
6) Does an hour of meditation per day lower blood pressure?
A) Observational study
B) Experiment with double blinding
C) Case-control study
D) Experiment with single blinding
E) Experiment without blinding

Identify the variable as either qualitative or quantitative.
7) The professions of adults.
A) Quantitative
B) Qualitative

8) The movie critics' ratings of the new movie on a scale of 0-10 where 10 = the best movie ever seen and 0 = the worst movie ever seen
A) Qualitative
B) Quantitative

Construct a pie chart representing the given data set.
9)

<table>
<thead>
<tr>
<th>Favorite Pizza Topping</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black olives</td>
<td>72</td>
</tr>
<tr>
<td>Mushrooms</td>
<td>60</td>
</tr>
<tr>
<td>Onions</td>
<td>28</td>
</tr>
<tr>
<td>Pepperoni</td>
<td>156</td>
</tr>
</tbody>
</table>

9) A)
B) Black olives 23%
Pepperoni 49%
Mushrooms 10%

C) Black olives 23%
Pepperoni 47%
Mushrooms 21%
Onions 9%

D) Black olives 72%
Pepperoni 156%
Mushrooms 0%


The stack plot below shows the value of each of Danny's investments. The stack plot contains three regions. The uppermost unshaded region represents the value of Danny's investment in individual stocks. The center shaded region represents the value of Danny's investment in mutual funds and the bottom region in black represents the value of Danny's investment in a CD. The thickness of a region at a particular time tells you its value at that time.

Use the graph to answer the question.

10) In which year was the value of Danny's investment in individual stocks the least?  
A) 1997  
B) 1998  
C) 1990  
D) 1991

The graph below shows the approximate annual percentage growth rate in world population for the years 1960 through 2010. Data is estimated by the UN Census Bureau.

Use the graph to answer the question.

11) In which year during the period 1960-2010 is estimated world population the greatest?  
A) 1963  
B) 1970  
C) 1960  
D) 2010
Use the graph to answer the question.

12) This double-bar graph shows the number of male (M) and female (F) athletes at a university over a four-year period.

![Double-bar graph showing the number of male and female athletes from 1966 to 1989](image)

Compare the trend in the number of male athletes during the four-year period and the trend in the number of female athletes during the four-year period.

A) The number of male athletes increased steadily over the four-year period. The number of female athletes increased to a peak in 1988 and then decreased again in 1989.

B) The number of male athletes and the number of female athletes increased steadily over the four-year period.

C) The number of male athletes increased steadily over the four-year period. The number of female athletes increased in 1987 then decreased again in 1988 and 1989.

D) The number of female athletes increased steadily over the four-year period. The number of male athletes increased to a peak in 1988 and then decreased again in 1989.

State whether the scatter diagram shows strong positive correlation, weak positive correlation, strong negative correlation, weak negative correlation, or no correlation.

13) 

![Scatter diagram with points plotted on a graph](image)

A) No correlation
B) Weak negative correlation
C) Weak positive correlation
D) Strong positive correlation
E) Strong negative correlation
State whether you think that the variables have strong positive correlation, weak positive correlation, strong negative correlation, weak negative correlation, or no correlation.

14) The age of a computer and its value.
   A) Strong positive correlation
   B) Strong negative correlation
   C) No correlation
   D) Weak positive correlation
   E) Weak negative correlation

Find the mean for the given sample data. Unless otherwise specified, round your answer to one more decimal place than that used for the observations.

15) 18, 20, 16, 18, 11
   A) 16.6
   C) 18
   D) 20.8

Find the median for the given sample data.

16) A store manager kept track of the number of newspapers sold each week over a seven-week period. The results are shown below.
    30, 13, 211, 164, 291, 247, 243
    \[ \text{Mode} = 211 \]
    Find the median number of newspapers sold.
    A) 164
    B) 211
    C) 171
    D) 243

Find the mode(s) for the given sample data.

17) 20, 40, 46, 40, 49, 40, 49
    A) 49
    B) 40
    C) 40.6
    D) 46

Identify the distribution as symmetric, left-skewed, or right-skewed.

18) The amounts of tax paid by U.S. residents.
    A) Symmetric
    B) Right-skewed
    C) Left-skewed

Answer the question.

19) Tell which of the following distributions would have the least variation.
    A) Weights of 20-year old women
    B) Weights of adult men
    C) Weights of all adults
    D) Weights of 20-year olds
Construct a boxplot as requested.

20) The test scores of 32 students are listed below. Construct a boxplot for the data set.

32  37  41  44  46  48  53  55
57  57  59  63  65  66  68  69
70  71  74  74  75  77  78  79
81  82  83  86  89  92  95  99

\[ \begin{align*}
32 & \quad 56 & \quad 69.5 & \quad 80 & \quad 99 \\
B) & \\
32 & \quad 56 & \quad 69.5 & \quad 80 & \quad 99 \\
C) & \\
32 & \quad 56 & \quad 69.5 & \quad 79 & \quad 99 \\
D) & 
\end{align*} \]

Find the standard deviation for the given data. Round your answer to one more decimal place than the original data.

21) 3, 5, 6, 6, 9, 1

A) 5.4 \quad B) 7.6 \quad C) 2.5 \quad D) 2.8

Use the range rule of thumb to approximate the standard deviation.

22) 2, 6, 15, 9, 11, 22, 1, 4, 8, 19

A) 5.23 \quad B) 6.3 \quad C) 2 \quad D) 6.8

\[ \begin{align*}
\text{Range} & = 22 - 1 \\
\text{Estimated Standard Deviation} & = \frac{22 - 1}{4} = \frac{21}{4} = 5.25
\end{align*} \]
23) Find the Annual percentage yield (APY)
A bank offers an APR of 8% compounded semi-annually. Carry four decimal points.

\[ APY = \left(1 + \frac{.08}{2}\right)^2 - 1 = .0816 = 8.16\% \]

A) 8.33%  B) 8.00%  C) 8.16%  D) 8.24%  E) 8.5%

24) Find the Annual percentage yield (APY)
A bank offers an APR of 8% compounded continuously. Carry four decimal points.

\[ APY = e^r - 1 = .08033 \\
= e^{.08} - 1 = .0833\]

A) 8.33%  B) 8.00%  C) 8.16%  D) 8.24%  E) 8.5%