1. Construct the dotplot for the given data.

A manufacturer records the number of errors each workstation makes during the week. The data are as follows.

\[6 \ 3 \ 2 \ 3 \ 5 \ 2 \ 0 \ 2 \ 5 \ 4 \ 2 \ 0 \ 1\]

2. The mean height of a basketball team is 6.30 feet with a standard deviation of 0.20 feet. The team's center is 6.90 feet tall. Find the center's z-score. Is his score unusual? Round results to the nearest hundredth.

\[
A \quad \text{C} \quad 2.50, \text{no}
\]

\[
B \quad \text{D} \quad 3.30, \text{yes}
\]

\[
C \quad \text{D} \quad 3.00, \text{yes}
\]

\[
D \quad \text{D} \quad 2.55, \text{no}
\]

\[
\overline{x} = 6.30 \text{ ft}, \quad s_x = 0.12 \text{ ft}
\]

\[
\bar{x} = 6.9
\]

\[
z_{\text{calc}} = \frac{x - \bar{x}}{s_x}
\]

\[
= \frac{6.9 - 6.3}{0.12}
\]

\[
= 3
\]

\[3 > 2 \quad \text{YES}\]
3. A nurse measured the blood pressure of each person who visited her clinic. Following is a relative-frequency histogram for the systolic blood pressure readings for those people aged between 25 and 40. The blood pressure readings were given to the nearest whole number. Approximately what percentage of the people aged 25-40 had a systolic blood pressure reading between 110 and 139 inclusive?

A  59%
B  39%
C  75%
D  89%
The table below shows the frequency distribution of FICO credit rating scores. Use the frequency distribution to construct a histogram. Does the result appear to be a normal distribution?

<table>
<thead>
<tr>
<th>FICO Score</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 - 449</td>
<td>1</td>
</tr>
<tr>
<td>450 - 499</td>
<td>1</td>
</tr>
<tr>
<td>500 - 549</td>
<td>6</td>
</tr>
<tr>
<td>550 - 599</td>
<td>6</td>
</tr>
<tr>
<td>600 - 649</td>
<td>11</td>
</tr>
<tr>
<td>650 - 699</td>
<td>17</td>
</tr>
<tr>
<td>700 - 749</td>
<td>18</td>
</tr>
<tr>
<td>750 - 799</td>
<td>27</td>
</tr>
<tr>
<td>800 - 849</td>
<td>9</td>
</tr>
<tr>
<td>850 - 899</td>
<td>1</td>
</tr>
</tbody>
</table>

Choose the correct histogram below.

- **A**
- **B**
- **C**

Does the result appear to be a normal distribution?

- **A** No, because the histogram has no obvious maximum.
- **B** Yes, because the histogram is approximately normal.
- **C** No, because the histogram is approximately uniform.

- **X** No, because the histogram is not symmetric.
5. The following frequency distribution analyzes the scores on a math test. Find the class boundaries of scores interval 80-99.

<table>
<thead>
<tr>
<th>Scores</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-19</td>
<td>2</td>
</tr>
<tr>
<td>20-39</td>
<td>4</td>
</tr>
<tr>
<td>40-59</td>
<td>6</td>
</tr>
<tr>
<td>60-79</td>
<td>15</td>
</tr>
<tr>
<td>80-99</td>
<td>5</td>
</tr>
</tbody>
</table>

\[ A \quad 79.5, 100.5 \]
\[ B \quad 80.5, 100.5 \]
\[ C \quad 79.5, 99.5 \]
\[ D \quad 80.5, 99.5 \]

6. The normal monthly precipitation (in inches) for August is listed for 20 different U.S. cities. Construct a boxplot for the data set. Include values of the 5-number summary in all boxplots.

0.4 1.0 1.5 1.6 2.0
2.2 2.4 2.7 3.4 3.4
3.5 3.6 3.6 3.7 3.7
3.9 4.1 4.2 4.2 7.0

\[ A \quad 2.9 \]
\[ B \quad 3.45 \]
\[ C \quad 2.85 \]
7. Determine which of the four levels of measurement (nominal, ordinal, interval, ratio) is most appropriate.

Voltage measurements of batteries: 1.5 V, 3 V, 4.5 V, 6 V, and 7.5 V

Choose the correct answer below.

- A  ○ Nominal
- B  ○ Ratio
- C  ○ Interval
- D  ○ Ordinal

8. The histogram below represents the number of television sets per household for a sample of U.S. households. What is the class width?

- A  ○ 5
- B  ○ 1
- C  ○ 2
- D  ○ 0.5

9. Find the z-score corresponding to the given value and use the z-score to determine whether the value is unusual. Consider a score to be unusual if its z-score is less than −2 or greater than 2. Round to the nearest hundredth if necessary.

A test score of 83 on a test having a mean of 65 and a standard deviation of 10.

- A  ○ 1.80; not unusual
- B  ○ 18.00; unusual
- C  ○ 1.80; unusual
- D  ○ −1.80; not unusual
10. The heights of a group of professional basketball players are summarized in the frequency distribution below. Find the mean height. Round your answer to one decimal place.

<table>
<thead>
<tr>
<th>Height (inches)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-71</td>
<td>2</td>
</tr>
<tr>
<td>72-73</td>
<td>6</td>
</tr>
<tr>
<td>74-75</td>
<td>14</td>
</tr>
<tr>
<td>76-77</td>
<td>12</td>
</tr>
<tr>
<td>78-79</td>
<td>14</td>
</tr>
<tr>
<td>80-81</td>
<td>8</td>
</tr>
<tr>
<td>82-83</td>
<td>2</td>
</tr>
</tbody>
</table>

\[ \bar{x} = \frac{\sum fx}{\sum f} = \frac{76,64}{20} = 76.6 \]

A. 75.3 in.
B. 76.6 in.
C. 13.5 in.
D. 78.0 in.

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

\[ 78 \quad 58 \quad 32 \quad 58 \quad 29 \quad 78 \]

A. 78
B. 55.5
C. 58
D. 78, 58
12. The pie chart shows the percent of the total population of 72,100 of Springfield living in the given types of housing. Round your result to the nearest whole number.

Find the number of people who live in apartments.

\[ \text{A} \quad 51,191 \text{ people} \]
\[ \text{B} \quad 20,909 \text{ people} \]
\[ \text{C} \quad 17,304 \text{ people} \]
\[ \text{D} \quad 29 \text{ people} \]

13. Convert 1.75 to an equivalent fraction and percent. Round percents to the nearest tenth of a percent.

\[ \text{A} \quad 1\frac{3}{4}, 17.5\% \]
\[ \text{B} \quad 1\frac{1}{2}, 175.0\% \]
\[ \text{C} \quad 1\frac{3}{4}, 17.5\% \]
\[ \text{D} \quad 1\frac{3}{4}, 175.0\% \]

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

\[ 9, 7, 5, 9, 10 \]

\[ \text{A} \quad 73.3 \]
\[ \text{B} \quad 71.1 \]
\[ \text{C} \quad 71.2 \]
\[ \text{D} \quad 57.0 \]
15. Use common sense to determine whether the given event is impossible; possible, but very unlikely; or possible and likely.

At least two people have the same birthday in a school of 150 students.

- Possible, but very unlikely
- Possible and likely
- Impossible

16. Use common sense to determine whether the given event is impossible; possible, but very unlikely; or possible and likely.

When Amina took a four-day Thanksgiving vacation in Seattle, it rained every day.

- Impossible
- Possible and likely
- Possible, but very unlikely

17. Find the range for the given sample data.

The owner of a small manufacturing plant employs six people. As part of their personnel file, she asked each employee to record the distance they travel one way from home to work. The six distances (in miles) are listed below:

2.7  5.1  1.2  4.9  6.9  3.2

- 0.5 mi
- 5.7 mi
- 5.1 mi
- 1.2 mi

18. Determine whether the given value is from a discrete or continuous data set.

The weight of Bill's pack as he sets off on a backpacking trip is 48.3 lb.

- Discrete
- Continuous
19. The distances (in miles) driven in the past week by each of a company's sales representatives are listed below.

39 84 226 274 380 417

Find the median distance driven. $\text{Median} = 250 \text{ miles}$

A $\bigcirc$ 274 mi
B $\bigcirc$ 202.5 mi
C $\bigcirc$ 250 mi
D $\bigcirc$ 226 mi

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

A tax auditor selects every 10,000th income tax return that is received.

A $\bigcirc$ Stratified
B $\times$ Systematic
C $\bigcirc$ Convenience
D $\bigcirc$ Cluster
E $\bigcirc$ Random

21. Determine whether the given description corresponds to an observational study or an experiment.

A sample of fish is taken from a lake to measure the effect of pollution from a nearby factory on the fish.

A $\bigcirc$ Experiment
B $\times$ Observational study
22. Convert 0.376 to an equivalent fraction and percent. Round percents to the nearest tenth of a percent.

A \[ \frac{46}{125}, \ 37.6\% \]

B \[ \frac{47}{125}, \ 3.76\% \]

C \[ \frac{46}{125}, \ 37.6\% \]

D \[ \frac{125}{46}, \ 3.76\% \]

23. Identify the type of observational study.

A researcher plans to obtain data by examining the financial transactions of victims who perished in a hurricane.

Choose the correct type of observational study below.

A \[ \text{retrospective} \]

B \[ \text{prospective} \]

C \[ \text{cross-sectional} \]

24. Determine whether the given value is a statistic or a parameter.

A homeowner measured the voltage supplied to his home on all 30 days of a given month, and the average (mean) value is 143.3 volts.

Choose the correct answer below.

A \[ \text{The given value is a parameter because the data collected represent a sample.} \]

B \[ \text{The given value is a statistic because the data collected represent a population.} \]

C \[ \text{The given value is a parameter because the data collected represent a population.} \]

D \[ \text{The given value is a statistic because the data collected represent a sample.} \]
25. Determine whether the given value is from a discrete or continuous data set.

The total number of phone calls a sales representative makes in a month is 425.

- [X] Discrete
- [ ] Continuous