Data Analysis and Probability Unit Test

Amakhut Tyehimba is reviewing answers for this assessment.

Points scored may differ from the grading guidelines because of teacher review. Contact your program teacher if you have any questions.

Correct ✅ Partial Credit ✅ Incorrect ❌

Multiple Choice

1. Find the product.

\[
\begin{bmatrix}
4 & 6 & 0 \\
0 & -3 & 3 \\
-1 & 2 & 8
\end{bmatrix} \times \begin{bmatrix}
8 & 12 & 0 \\
0 & -6 & 6 \\
-2 & 4 & 16
\end{bmatrix}
\]

Correct ✅ (1 pt)

\[
\begin{bmatrix}
6 & 8 & 2 \\
2 & -1 & 5 \\
1 & 4 & 10
\end{bmatrix}
\]

Incorrect ❌ (0 pts)

\[
\begin{bmatrix}
8 & 6 & 0 \\
0 & -3 & 3 \\
-2 & 2 & 8
\end{bmatrix}
\]

1/1 point

2. Find the mean, median, and mode of the data set. Round to the nearest tenth.

Time spent studying for a math test:

55, 60, 38, 45, 32, 30, 25, 60, 40, 47, 60, 30, 55, 60, 37, 40, 60, 60, 40, 45, 46, 48 (1 point)

Incorrect ❌ (0 pts)

Correct ✅ (1 pt)

1/1 point
3. Make a box-and-whisker plot of the data.

20, 23, 28, 14, 13, 24, 18, 11 (1 point)

4. Make a box-and-whisker plot of the data.

Average temperature in Pittsburgh in June:
79, 70, 73, 84, 83, 88, 75, 72, 76, 68, 68, 79, 84, 74, 75, 85, 67, 78, 69, 80 (1 point)

5. Find the values of the 40th and 90th percentile of the data.

25, 1, 6, 17, 20, 9, 12, 18, 5, 3, 11, 19, 24, 5, 12, 19, 23, 20, 2, 10 (1 point)
6. You roll a standard number cube. Find \( P(\text{number greater than 2}) \). \((1 \text{ point})\)

\[
\begin{align*}
\text{Correct} & \quad \frac{2}{3} \\
(0 \text{ pts}) & \quad \frac{5}{6} \\
(0 \text{ pts}) & \quad \frac{6}{5} \\
(0 \text{ pts}) & \quad \frac{3}{2}
\end{align*}
\]

1/1 point

7. You have the numbers 1–25 written on slips of paper. If you choose one slip at random, what is the probability that you will select a number that is divisible by 4? \((1 \text{ point})\)

\[
\begin{align*}
(0 \text{ pts}) & \quad \frac{1}{5} \\
\text{Correct} & \quad \frac{6}{25} \\
(0 \text{ pts}) & \quad \frac{4}{25} \\
(0 \text{ pts}) & \quad \frac{2}{3}
\end{align*}
\]

1/1 point

8. You have the numbers 1–24 written on slips of paper. If you choose one slip at random, what is the probability that you will not select a number that is divisible by 3? \((1 \text{ point})\)

\[
\begin{align*}
(0 \text{ pts}) & \quad \frac{3}{8} \\
(0 \text{ pts}) & \quad \frac{1}{3} \\
(0 \text{ pts}) & \quad \frac{5}{8} \\
\text{Correct} & \quad \frac{2}{3}
\end{align*}
\]

1/1 point

9. A school orders 800 calculators from a manufacturer. If the probability of a calculator being defective is 1.8%, predict how many of the calculators are likely to be defective. Round your answer to the nearest whole number. \((1 \text{ point})\)

\[
\begin{align*}
\text{Correct} & \quad 14 \text{ calculators} \\
(0 \text{ pts}) & \quad 15 \text{ calculators} \\
(0 \text{ pts}) & \quad 144 \text{ calculators}
\end{align*}
\]
10. Teesha is in French Club. There are 10 freshman, 12 sophomores, 15 juniors, and 30 seniors in the club. The advisor is going to randomly choose one of the members of the club to be a guide for an important visitor.

Find the probability that she will choose a junior. (1 point)

\[ \frac{15}{67} \]

1/1 point

11. The number of deer spotted in a nature preserve each day over a two-week period is listed below.

32, 27, 15, 12, 42, 35, 46, 29, 38, 18, 40, 38, 32, 34

Which frequency table represents the data? (1 point)

<table>
<thead>
<tr>
<th>Deer</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>10–19</td>
<td>3</td>
</tr>
<tr>
<td>20–29</td>
<td>3</td>
</tr>
<tr>
<td>30–39</td>
<td>5</td>
</tr>
<tr>
<td>40–49</td>
<td>4</td>
</tr>
</tbody>
</table>

1/1 point
12. The data below show the number of games won by a football team in each of the last 15 seasons. What is a histogram that represents the data?

3, 4, 8, 12, 7, 2, 1, 15, 16, 6, 10, 13, 4, 1, 5 (1 point)
13. Is the histogram uniform, symmetric, or skewed?

(1 point)

- [ ] uniform
- [X] symmetric
- [ ] skewed

0 / 1 point
14. The table shows the number of hours that a group of teammates spent in their first week of training for the swimming finals. In the second week, they each add 4 hours to their training times. What are the mean, median, mode, and range of times for the second week?

<table>
<thead>
<tr>
<th>Swimmer</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danielle</td>
<td>10</td>
</tr>
<tr>
<td>Jesse</td>
<td>8</td>
</tr>
<tr>
<td>Julie</td>
<td>12</td>
</tr>
<tr>
<td>Alan</td>
<td>6</td>
</tr>
<tr>
<td>Adam</td>
<td>5</td>
</tr>
<tr>
<td>Bob</td>
<td>4</td>
</tr>
<tr>
<td>Marianne</td>
<td>10</td>
</tr>
</tbody>
</table>

(1 point)

- (0 pts) mean = 11.86
- median = 12
- mode = 8
- range = 14

- (0 pts) mean = 12
- median = 11.86
- mode = 14
- range = 8

- (0 pts) mean = 12
- median = 11.86
- mode = 8
- range = 14

✓ (1 pt) mean = 11.86
- median = 12
- mode = 14
- range = 8

1 /1 point

15. A store sells five models of road bikes for $400.00, $500.00, $550.00, $500.00, and $700.00. If the sales tax rate is 6%, what are the mean, median, mode, and range of the total cost of the bikes?

(1 point)

- (0 pts) mean = $530.00
- median = $500.00
- mode = $500.00
- range = $300.00

- (0 pts) mean = $50.00
- median = $530.00
- mode = $500.00
- range = $300.00

- (1 pt) mean = $561.80
- median = $530.00
- mode = $530.00
- range = $318.00

0 /1 point
16. What are the minimum, first quartile, median, third quartile, and maximum of the data set?  
2, 6, 12, 8, 3, 9, 14, 20  (1 point)  
   - (0 pts) minimum = 2; first quartile = 3; median = 8.5; third quartile = 14; maximum = 20
   - (0 pts) minimum = 2; first quartile = 6; median = 8; third quartile = 12; maximum = 20
   - (0 pts) minimum = 2; first quartile = 4.5; median = 9; third quartile = 14; maximum = 20
   - (1 pt) minimum = 2; first quartile = 4.5; median = 8.5; third quartile = 13; maximum = 20
   1/1 point

17. What are the minimum, first quartile, median, third quartile, and maximum of the data set?  
60, 50, 130, 200, 180, 150, 100, 140  (1 point)  
   - (1 pt) minimum 50; first quartile 80; median 135; third quartile 165; maximum 200
   - (0 pts) minimum 50; first quartile 107.5; median 150; third quartile 182.5; maximum 200
   - (0 pts) minimum 50; first quartile 80; median 135; third quartile 182.5; maximum 200
   - (0 pts) minimum 50; first quartile 65; median 150; third quartile 165; maximum 200
   1/1 point

18. The box-and-whisker plots below show the test scores for two calculus classes. What do the interquartile ranges tell you about the two classes?  
   - (1 pt) Class A has more consistent test scores.
   - (0 pts) Class B has more consistent test scores.
   - (0 pts) Overall, Class A has better scores than Class B.
   - (0 pts) Overall, Class B has better scores than Class A.
   0/1 point

19. Is the following data set qualitative and quantitative?  
a student’s favorite subject in high school  (1 point)  
   - (1 pt) qualitative  
   - (0 pts) quantitative  
   1/1 point

20. You want to determine the average number of songs that people keep on their MP3 players. You want to collect data from a random sample of at least 300. Which of these would be the most valid method for collecting data?  (1 point)  
   - (0 pts) Survey students coming in and out of your school cafeteria.
(1 pt) Survey an equal number of students, teachers, parents, and grandparents.

(0 pts) Survey the residents in a retirement community.

(0 pts) Survey the people coming in and out of the grocery store on a Sunday morning.

1 / 1 point

21. A mathematics journal has accepted 14 articles for publication. However, due to budget restraints, only 7 articles can be published this month. How many specific ways can the journal editor assemble 7 of the 14 articles for publication? (1 point)

(0 pts) 14

(0 pts) 3,432

(0 pts) 98

✓ (1 pt) 17,297,280

1 / 1 point

22. Your English teacher has decided to randomly assign poems for the class to read. The selection of poems includes four poems by Shakespeare, five poems by Coleridge, two poems by Tennyson, and two poems by Lord Byron.

What is the probability that she will assign a poem by Shakespeare and then a poem by Tennyson? (1 point)

✓ (1 pt) $\frac{2}{39}$

(0 pts) $\frac{8}{169}$

X (0 pts) $\frac{6}{13}$

(0 pts) $\frac{8}{13}$

0 / 1 point

23. What is the value of $7P_4$? (1 point)

(0 pts) 28

(0 pts) 120

(0 pts) 210

✓ (1 pt) 840

1 / 1 point

24. Of six students in a class, three will be chosen for student government positions. What is the number of permutations of those six students to hold the three different positions? (1 point)

(0 pts) 3

(0 pts) 18

(0 pts) 81

✓ (1 pt) 120
25. A restaurant offers 7 different appetizers and 11 different entreés. What is the number of possible unique combinations of appetizer and entree that can be ordered? (1 point)

- (0 pts) 18
- (1 pt) 77
- (0 pts) 110
- (0 pts) 770

The final score is 19/25 (76%).