1. Jayma recorded the time it takes her to get to school using three different routes.

<table>
<thead>
<tr>
<th>Hour</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route 1 (min)</td>
<td>12</td>
<td>8</td>
<td>11</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Route 2 (min)</td>
<td>14</td>
<td>9</td>
<td>12</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Route 3 (min)</td>
<td>6</td>
<td>14</td>
<td>10</td>
<td>9</td>
<td>11</td>
</tr>
</tbody>
</table>

On which route does Jayma have a more consistent travel time?

a. Route 1
b. Route 3
c. Route 2

2. Which set is normally distributed?

<table>
<thead>
<tr>
<th>Interval</th>
<th>0–9</th>
<th>10–19</th>
<th>20–29</th>
<th>30–39</th>
<th>40–49</th>
<th>50–59</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set A.</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>10</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Set B.</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Set C.</td>
<td>1</td>
<td>5</td>
<td>9</td>
<td>10</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Set D.</td>
<td>8</td>
<td>9</td>
<td>3</td>
<td>11</td>
<td>8</td>
<td>14</td>
</tr>
</tbody>
</table>

a. Set A.
b. Set B.
c. Set D.
d. Set C.

3. Determine the percent of data between the following z-scores: $z = -1.50$ and $z = 1.50$.

a. 47.20%
b. 100%
c. 94.41%
d. 86.63%
4. A poll was conducted about an upcoming election. The results are considered accurate within ±3.8 percent points, 9 times out of 10.
State the confidence level.
   a. 99%
   b. 95%
   c. 19%
   d. 90%

5. A poll was conducted about an upcoming election. The result that 54% of people intend to vote for one of the candidates is considered accurate within ±7.1 percent points, 19 times out of 20.
State the confidence interval.
   a. 46.9%–61.1%
   b. 54%–61.1%
   c. 47.1%–60.9%
   d. 46.9%–54%

6. The results of a survey have a confidence interval of 88.7% to 90.5%, 99 times out of 100.
Determine the margin of error.
   a. ±0.9%
   b. ±1.1%
   c. ±0.7%
   d. ±1.3%

7. At the end of a bowling tournament, three friends analyzed their scores.
   Lada’s mean bowling score is 125 with a standard deviation of 27.
   Quinn’s mean bowling score is 182 with a standard deviation of 28.
   Kamal’s mean bowling score is 170 with a standard deviation of 20.

   Who is the more consistent bowler?
   a. Impossible to tell.
   b. Quinn
   c. Kamal
   d. Lada
8. Which histogram represents the following test scores?
Geography Test 3 Scores (out of 100)
92 85 78 67 54
92 83 78 65 53
89 83 77 62 49
88 79 75 62 48
86 79 68 59 42

a. [Histogram A]

b. [Histogram B]

c. [Histogram C]

d. [Histogram D]
Short Answer

9. Using 68%, 95%, 99.7% intervals, with mean 12 and standard deviation of 3.5.

Find percentage between:

a. 1.5cm and 22.5cm
b. 5cm and 15.5 cm
c. Greater than 19 cm

10. A company measured the lifespan of a random sample of 40 batteries in their MP3 players. Times are in hours.

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7.8</td>
<td>11.0</td>
<td>10.5</td>
<td>8.8</td>
<td>9.1</td>
<td>9.4</td>
<td>11.2</td>
<td>9.4</td>
</tr>
<tr>
<td>9.3</td>
<td>8.5</td>
<td>7.9</td>
<td>9.1</td>
<td>7.2</td>
<td>9.3</td>
<td>9.4</td>
<td>9.7</td>
</tr>
<tr>
<td>9.2</td>
<td>8.2</td>
<td>7.4</td>
<td>8.8</td>
<td>8.6</td>
<td>8.0</td>
<td>11.1</td>
<td>9.2</td>
</tr>
<tr>
<td>8.2</td>
<td>9.6</td>
<td>8.5</td>
<td>10.5</td>
<td>10.7</td>
<td>9.5</td>
<td>11.4</td>
<td>8.2</td>
</tr>
</tbody>
</table>

a) Choose an interval width so you have seven intervals.
b) Create a frequency table for the data.
c) Find the mean and standard deviation.
d) The company will refund the cost if the battery dies under 7 hours. From 10,000 batteries sold, how many will be refunded?

11. Students were surveyed to determine the number of text messages they send. They found a mean of 15 and a standard deviation of 3.4. Determine the percentage of students that text:

a. Between 14 and 17 per day.
b. Less than 10 per day.
c. More than 25 per day.
d. Calculate the number of texts that up to 85% of students send per day.

e. Calculate the number of texts that up to 85% of students send per day.

12. The results of a survey regarding the percentage of people who actually vote in a Federal Election shows a confidence interval of 88.7% to 90.5%, 99 times out of 100.

Determine:
a. the confidence level
b. the margin of error
c. the confidence interval range for 50 000 people surveyed.
d. Explain the results.
MULTIPLE CHOICE

1. ANS: C  PTS: 1  DIF: Grade 11  REF: Lesson 5.3
   OBJ: 1.2 Calculate, using technology, the population standard deviation of a data set. | 1.3 Explain, using examples, the properties of a normal curve, including the mean, median, mode, standard deviation, symmetry and area under the curve.
   TOP: Standard deviation
   KEY: standard deviation

2. ANS: D  PTS: 1  DIF: Grade 11  REF: Lesson 5.4
   OBJ: 1.4 Determine if a data set approximates a normal distribution, and explain the reasoning.
   TOP: The normal distribution
   KEY: normal distribution

3. ANS: D  PTS: 1  DIF: Grade 11  REF: Lesson 5.5
   OBJ: 1.8 Determine, with or without technology, and explain the z-score for a given value in a normally distributed data set.
   TOP: Applying the normal distribution: z-scores
   KEY: z-score | standard normal distribution

4. ANS: D  PTS: 1  DIF: Grade 11  REF: Lesson 5.6
   OBJ: 2.1 Explain, using examples, how confidence levels, margin of error and confidence intervals may vary depending on the size of the random sample. | 2.2 Explain, using examples, the significance of a confidence interval, margin of error or confidence level.
   TOP: Confidence intervals
   KEY: margin of error | confidence interval | confidence level

5. ANS: A  PTS: 1  DIF: Grade 11  REF: Lesson 5.6
   OBJ: 2.1 Explain, using examples, how confidence levels, margin of error and confidence intervals may vary depending on the size of the random sample. | 2.2 Explain, using examples, the significance of a confidence interval, margin of error or confidence level.
   TOP: Confidence intervals
   KEY: margin of error | confidence interval | confidence level

6. ANS: A  PTS: 1  DIF: Grade 11  REF: Lesson 5.6
   OBJ: 2.1 Explain, using examples, how confidence levels, margin of error and confidence intervals may vary depending on the size of the random sample. | 2.2 Explain, using examples, the significance of a confidence interval, margin of error or confidence level.
   TOP: Confidence intervals
   KEY: margin of error | confidence interval | confidence level

7. ANS: C  PTS: 1  DIF: Grade 11  REF: Lesson 5.2
   TOP: Frequency tables, histograms, and frequency polygons
   KEY: frequency distribution | histogram | frequency polygon

8. ANS: C  PTS: 1  DIF: Grade 11  REF: Lesson 5.3
   OBJ: 1.3 Explain, using examples, the properties of a normal curve, including the mean, median, mode, standard deviation, symmetry and area under the curve.
   TOP: Standard deviation
   KEY: mean | standard deviation

SHORT ANSWER

9. on