

## Unit 5 Overview – Statistics

### Learning Outcomes

D1. Demonstrate an understanding of normal distribution, including: standard deviation and z-scores.

- 1.1 Explain, using examples, the meaning of standard deviation.
- 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.
- 1.4 Determine if a data set approximates a normal distribution, and explain the reasoning.
- 1.5 Compare the properties of two or more normally distributed data sets.
- 1.6 Explain, using examples that represent multiple perspectives, the application of standard deviation for making decisions in situations such as warranties, insurance or opinion polls.
- 1.7 Solve a contextual problem that involves the interpretation of standard deviation.
- 1.8 Determine, with or without technology, and explain the z-score for a given value in a normally distributed data set.
- 1.9 Solve a contextual problem that involves normal distribution

D2. Interpret statistical data, using: confidence intervals, confidence levels, and margin of error.

- 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.
- 2.3 Make inferences about a population from sample data, using given confidence intervals, and explain the reasoning.
- 2.4 Provide examples from print or electronic media in which confidence intervals and confidence levels are used to support a particular position.
- 2.5 Interpret and explain confidence intervals and margin of error, using examples found in print or electronic media.
- 2.6 Support a position by analyzing statistical data presented in the media.

### By the end of the unit, you should be able to solve this type of question...

1) A machine is used to fill soda bottles. The amount of soda dispensed into each bottle varies slightly. Suppose the amount of soda dispensed into the bottles is normally distributed. If at least 99.7% of the bottles must have between 585 and 595 milliliters of soda, find the greatest standard deviation, to the nearest hundredth, that can be allowed.

2) Yumi always waits until her gas tank is nearly empty before refuelling. She keeps track of the distance she drives on each tank of gas. The distance varies depending on the weather and the amount she drives on the highway. The distance has a mean of 520 km and a standard deviation of 14 km. What percent of the time does Yumi drive between 508 km and 538 km on a tank of gas?

**Unit 5 Lessons**

5.1 3M's

5.2 Frequency Charts

5.3 Standard Deviation

5.4 Normal Distribution

5.5 Calculator

5.6 Z-Scores

5.7 Confidence Intervals

5.8 Confidence Intervals

Review Worksheet

Review Practice Test Questions

Unit Test    **Total = 11 classes**