

## **Data Analysis and Probability**

**Goal: The learner will understand and use graphs and data analysis.**

**Objective:**

**4.02 Calculate, use, and interpret the mean, median, mode, range, frequency distribution, and inter-quartile range for a set of data.**

To achieve this objective, students should:

- Describe and interpret the mean, median and mode as measures of central tendency for a set of data.
- Calculate the interquartile range (IQR) and understand that it represents the middle 50% of the data distribution.
- Interpret the mean as a balancing point for the values of a set of data. The mean of a data set is the value where the sum of the distances from each data point to the mean is equal on both sides. If data points are added to a data set, the mean will increase or decrease towards the newly added data point to keep the “balance.” If you change the value of an existing data point, the value of the mean will decrease if a data point’s value decreases, and increase if the data point’s value increases. The magnitude of the increase or decrease in the mean is related to how much the individual data point’s value decreases or increases.
- Interpret the median as a balancing point of the number of data points. The median is a different kind of balance point in a distribution in that it is the value where there are an equal number of data points on either side of that value. Unlike the mean, the distances between the data values play little importance to the value of the median. If you change a data point’s value, as long as you keep the same number of data points above and below the median value, the median will not change.
- Describe the ways that the data varies within the data set, including the spread between minimum and maximum values, the range, and whether any data appear to be outliers.