## MTH1W – Unit 9: Statistics

## Lesson #9.1: Intro to Statistics

**Learning Goal:** We are learning to understand the different types of data and how to calculate basic statistical summaries.

**Statistics** is a vast and growing field of mathematics and every day we are exposed to many stats and probabilities. What is the chance that it will rain tomorrow? What is the average in my classes? Am I a normal height for my age? Companies are using statistics and data every minute to make decisions. Netflix uses what you watch to curate what is on your main screen and helps them to decide to make more similar content. Garbage collection needs to be done in an optimal way to save on gas and trips to and from the dump. Sports teams are hiring statisticians as coaches to help makes player decisions. The list is unending. In this unit, we will explore some of the basics ways to summarize and analyze data.

First, we need to understand different types of data. The first two types are called **qualitative** and **quantitative**.

'quantity" "qualifies" Quantitative Qualitative - countable > numbers - measurable -descriptive Louses senses - understand the - not always fact, conctimus - how many, how often, etc... - gother information through observation. Example: Given the following picture, describe what you see using both qualitative and quantitative data.



Qualitative hard wood - reddish brown brook shelf - rectangular - holds books/lego, begnie boos

Quartitative - So cn fall - 25 cm per shelf - 40 cm by 29 cm - 3 Shelves - \$100 shelf

Quantitative data has two types of data, continuous and discrete.

Continuous Discrete - specific values - any value La decimals, fraction, whole #s 6 1,2,5 .... - counted numbers. Temperature, height, length of - # of episoder solid likes that a novie - # of liker on Youthe measured numbers. -the of siblings. sepresent all number Lastly, we will look at how we can calculate some statistical summaries: mean, median, mode and range. The **mean** is the <u>average</u>. This is an easy, yet tedious calculation: - add up all the numbers, then divide by number of The **median** is the <u>middle</u>. Calculating the median depends on whether you have an even or odd list of numbers. Sort the numbers from lowest to highert Even list: X, 2, 3, 4, 15, 16 middle: 3++- 3.5 If odd: X, Z, B, A, 5

The **mode** is the number that shows up the MOST. If there is no mode, state "no mode". If there is more than one, they state all the numbers that apply.

The range is a measure of spread, meaning how wide or narrow is the spread of the data is. The range is calculated by:

largest number - smallest number.

Two examples: Calculate the mean, median, mode, and range for each data set.

Il data points .: odd Hours Slept 25 & 725 68 7.25 & 6 & 575 7 7.5  $\frac{11}{2} = 5,5 \Rightarrow 6^{44}$ Mean: <u>72.75</u> = 6.6 hours median: 5.75, 6, 6, 6, 6, 6, 5, 7, 7, 25, 7.5, 7.5, 7.5 Mode: 6 hours. Range: 7,5-5.75 = 1,75 hours. Minutes to Run 5km Medicn: 17.9, 22.3, 27.3, 29, 29, 31.8, 33.4, 34.1, 34.3, 36.9 Median = 29+31.8 60.8 = 30.4 Mode: 29 minutes Konge: 36.9-17.9 = 19 minutes.

**Success Criteria:** 

- I can identify the difference between qualitative vs quantitative data and discrete vs continuous
- I can calculate the mean, median, mode, and range from a given data set