

Lesson 3.1 – One & Two Variable Data

Goal: Examine differences between one and two variable data and explore how each are represented

TERMINOLOGY

- **Variable:** an unknown value/attribute that can be measured
- **One-variable data:** gives the measures of one attribute
 - Counts the number of occurrences for possible values of the variable
 - Often displayed as: Frequency tables, bar graphs, pie charts
 - Analyzed using: average (mean), median, and mode, as well as range, variance, and standard deviation (recall grade 11)
- **Two-variable data:** gives the measures of two attributes
 - Compares the values of the independent and dependent variables
 - Often displayed as: table values, order pair, scatter plot, etc.
 - Analyzed using: correlations, linear regression, and non-linear regression (more to come...)
- **Mean:** the average of a set of one-variable data
- **Median:** the middle value in a SORTED set of one-variable data
- **Mode:** the most frequently occurring value in a set of one-variable data
- **Correlation:** measures the strength of the relationship between 2 variables

Identifying Situations of One and Two Variable Data

Ask yourself:

1. What is this information measuring?
2. How can this information be displayed?
3. How can this information be analyzed?

Example 1 State whether each situation involves one-variable or two-variable data. **Justify** your answer.

a) Noah researches annual hours of sunshine in Canadian cities.

One variable data.

Noah is only measuring hours of sunshine.

b) A study compares the amount of time people spend watching TV and the amount of time reading.

Two variable data

The study is comparing time watching TV and time spend reading

Types of Data

- **Categorical Data:** Non-numerical data that is arranged into categories
Examples: *favourite pie, favourite colour.*
- **Discrete Data:** Numerical data that is distinct (specific) and can be counted
Examples: *# of people, favourite number*
- **Continuous Data:** Numerical data that can hold any value
Examples: *Height, weight*

Displaying Data

Bar Graph

- One variable data
- Shows frequency of each data value
- Used for **discrete or categorical data**

Histogram

- One variable data
- Shows frequency of a **RANGE** of data values
- Used for **continuous data**

Pie Chart

- One variable data
- Shows proportion of each data value
- Used for **categorical data**

Scatter Plot

- Two variable data
- Shows two pieces of info for each item
- Used for **discrete or continuous data**

Deciding Which Graph to Draw

- Ask yourself:
1. Is it one or two variable data?
 2. What type of data is it?

Example 2 For a class project, Dylan surveyed students about their part-time jobs. The data is shown below.

a) What type of graph would be best to show how many hours each student worked on the weekend?

*↳ One variable
↳ Continuous
Use a Histogram*

b) What type of graph would best show a possible relationship between weekday and weekend hours?

*↳ Two variable
↳ Continuous
Use a Scatterplot!*

Student	Hours Spent at Part-Time Job	
	Week Hours	Weekend Hours
Anya	5.0	12.5
Ellen	8.0	12.0
Fiona	17.0	8.0
Aaron	0.0	16.5
Leila	10.0	16.0
Mason	9.5	8.0
Petra	15.0	6.0