

TERMINOLOGY

VARIABLE: an unknown value/attribute that can be measured

ONE-VARIABLE DATA: gives the measures of one attribute.

Counts the frequency of occurrences for possible values of the variable

Often displayed as:

tally frequency charts bar graphs
histograms circle (pie) charts

Analyzed using: mean, median,
and mode, as well as range, variance, and standard deviation.

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 two variables

TWO-VARIABLE DATA: gives the measures of two attributes

Compares the values of the independent (x-axis) and dependent (y-axis) variables

Often displayed as:

ordered pairs scatter plots two column charts

Analyzed using: correlations, linear regression, and non-linear regression (more to come...)

KEY WORDS

~~Measured~~
~~One attribute~~
~~Frequency~~
~~Tally~~
Frequency charts
Bar graphs
Histograms
~~Circle (pie) charts~~
Mean, median, mode
Average
Middle
~~Frequently~~
Relationship, two
Two attributes
Dependent (x - axis)
Independent (y-axis)
Ordered pairs
Scatter plots
Two column charts

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.

Two things are measured:
1) time people spend watching TV
2) time people spend reading

TYPES OF DATA

Categorical Data: non-numerical data that is arranged into categories

Examples: favourite color, city, sports team, gender

Discrete Data: numerical data that is specific and can be counted (integers)

Examples: age, class size, family size

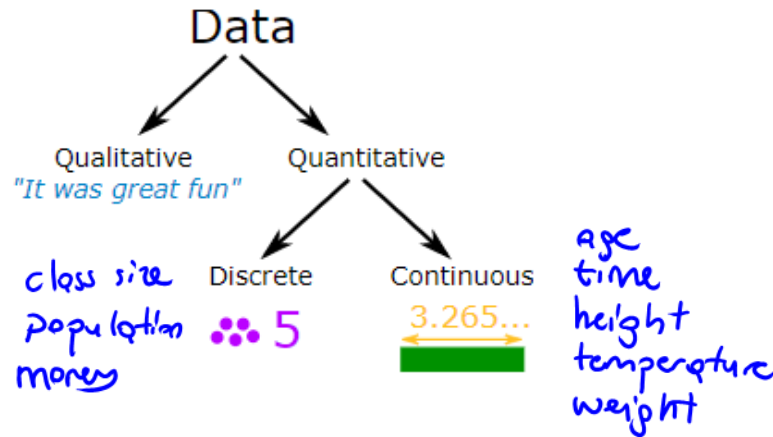
Continuous Data: numerical data that can hold any value

Examples: age, weight, height, temperature, time

Discrete data is counted, continuous data is measured.

KEY WORDS

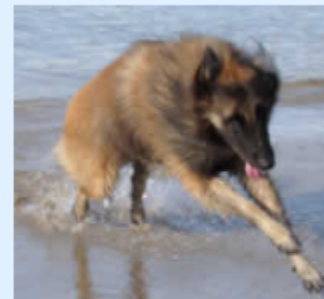
- Non-numerical
- Favourite colour
- City
- Sport team
- gender
- Numerical
- Age
- Class size
- Family size
- Numerical
- Age
- Weight
- Height
- Temperature
- Counted
- measured



Example: What do we know about Arrow the Dog?

Qualitative:

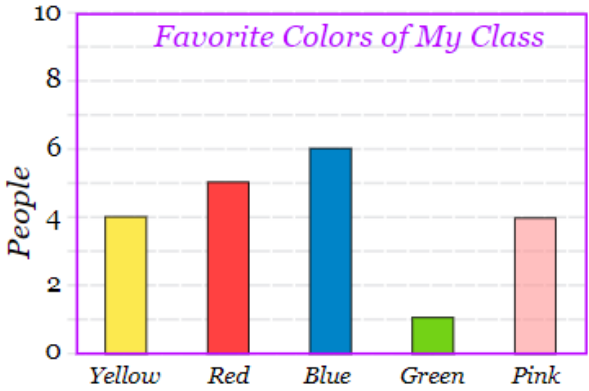
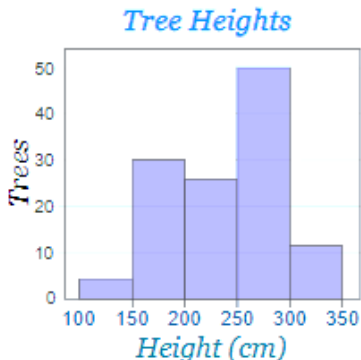
- He is brown and black
- He has long hair
- He has lots of energy

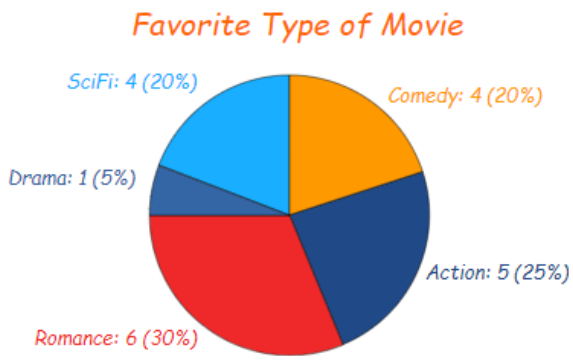
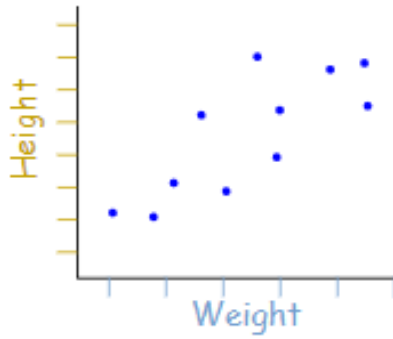


Quantitative:

- Discrete:
 - He has 4 legs
 - He has 2 brothers
- Continuous:
 - He weighs 25,5 kg
 - He is 565 mm tall

DISPLAYING DATA

BAR GRAPH	HISTOGRAM
<p>Shows relative sizes of different results:</p> <ul style="list-style-type: none"> One variable data Shows frequency of each data Discrete or categorical data 	<p>Shows frequency of a RANGE of data values</p> <ul style="list-style-type: none"> One variable data Groups numbers into ranges. Used for continuous data 

PIE CHART	SCATTER PLOT										
<ul style="list-style-type: none"> One variable data Shows proportion of each data value Used for categorical data <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <caption>Table: Favorite Type of Movie</caption> <thead> <tr style="background-color: #a0c0ff;"> <th>Comedy</th> <th>Action</th> <th>Romance</th> <th>Drama</th> <th>SciFi</th> </tr> </thead> <tbody> <tr style="background-color: #a0c0ff;"> <td>4</td> <td>5</td> <td>6</td> <td>1</td> <td>4</td> </tr> </tbody> </table> 	Comedy	Action	Romance	Drama	SciFi	4	5	6	1	4	<p>Show the relationship between two sets of data.</p> <ul style="list-style-type: none"> Two variable data Shows two pieces of info for each item Used for discrete or continuous data 
Comedy	Action	Romance	Drama	SciFi							
4	5	6	1	4							

DECIDING WHICH GRAPH TO DRAW

Ask yourself:

1. Is it one or two variable data?
2. What type of data is it?

Example 1:

a) Does the table show one or two variable data? 1 variable

(Note: Frequency is not a variable.)

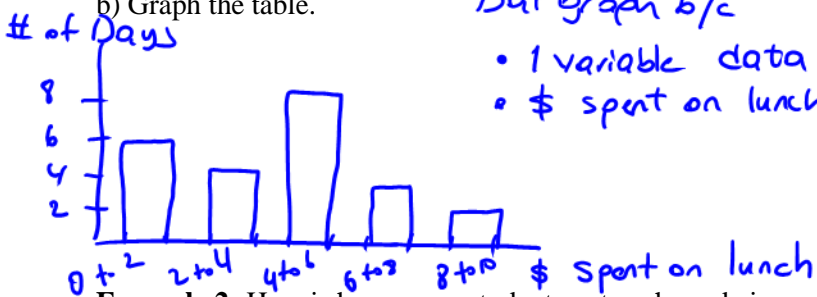
Range

\$ Spent on Lunch	Frequency (# of days)
0 to 2	6
2 to 4	4
4 to 6	8
6 to 8	3
8 to 10	2

b) Graph the table.

Bar graph b/c

- 1 variable data
- \$ spent on lunch is discrete



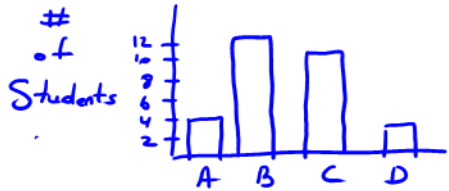
Example 2: Here is how many students got each grade in recent test:

A	B	C	D
4	12	10	2

a) Does the table show one or two variable data? 1 variable

b) Graph the table.

• Marks are categorical



OR PIE CHART if you want to see % of each grade

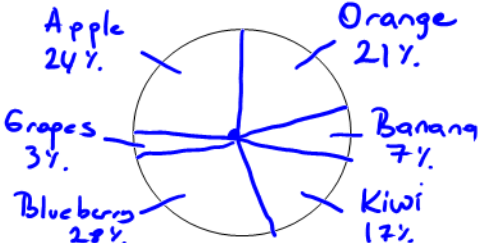
Example 3: 145 people were asked "Which is the nicest fruit?":

a) One or two variable data? 1 variable

b) Graph the table. Categorical

Fruit:	Apple	Orange	Banana	Kiwifruit	Blueberry	Grapes	Total
People:	$\frac{35}{145}$	$\frac{30}{145}$	$\frac{10}{145}$	$\frac{25}{145}$	$\frac{40}{145}$	$\frac{5}{145}$	145
	24%	21%	7%	17%	28%	3%	

categorical



OR Bar graph since 1 variable categorical data

Example 4: 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?

- 1 variable (time)
 - continuous (time)
- } Histogram

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

- 2 variable (weekday vs weekend hours)
- continuous (time)

Scatter plot

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