Dot plots and stem plots

Sunday, 10 February 2019 3:17 pm

- ★ By the end of the lesson I would hope that you have an understanding and be able to apply to questions the following concepts:
 - Understand what we mean by the term summary statistics
 - Understand what a dot plot is
 - How to create a dot plot
 - How to read a dot plot
 - Understand what a stem plot is
 - How to create a stem plot
 - How to read a stem plot

RECAP:

In the previous section of this course, we looked at the different types of data:

- Categorical
 - Nominal
 - Ordinal
- Numerical
 - Discrete
 - Continuous

We also looked at the ways we can represent the data using:

- Bar charts
- Segmented bar charts
- Histograms
- Frequency tables

We even looked at some of the ways we can describe the data:

- Shape and outliers
- Centre
- Spread

We now need to find other ways to describe the data. We do this using a range of techniques.

Each mathematical concept will give us a new way to describe the data.

Talking about the important stuff

We get hit with lots of rubbish data every day!

The president of the United State of America is always shouting about "FAKE NEWS".

Whilst we don't have a lot of fake news in Mathematics, we do have a lot of things we can ignore.

Summary statistics

This is a term for the important things we need to know about some data.

- Measures of centre
- Measure of spread

The above are really important and can tell us a lot about the data.

Showing numerical data

We have already met the histogram which helps us describe numerical data. The problem is: **as we use intervals, we don't know what the original data was.**



One way to retain the data is to use something as simple as a **dot plot**. This is **only good for small data sets!** This would be dreadful for showing all the ages between 1 and 100 for example!

Dot plots

Example extracted from the Cambridge Further Textbook





Stem plots



Ordered Stem Plot

To be able to do anything useful with a stem plot, we need to ensure that the leaves are ordered. Nothing like keeping things tidy to ensure we have correct answers!



The more important thing of a stem plot is the key! DO NOT FORGET THE KEY.

Making it more pretty

Some times, we end up with data which spreads across a really long line. This isn't very pretty. So, we can adapt the stem plot into something called a stem plot with split stems. Look at the following data:

(2) 12, 13, 9, 18, 17, 7, 16, 12, 10, 16, 14, 11, 15, 16, 5, 17

Unordered:

Ordered:

$$0 | 279 \\ | 0 | 2 2 3 4 5 5 6 6 6 7 7 8 \\ Key 1 | 2 = 12$$

Let's split the stems:

Stem split into halves



Stem split into fifths:



