IPHONE CHALLENGE

Lesson Plan 1 and 2

Main focus of activity:

To make an informed decision on which phone is more reliable. This will mean calculating the averages (mean, median, lower quartile and upper quartile) from the information given.

- To be able to calculate the cumulative frequency in a table
- To be able to plot a cumulative frequency curve
- To be able to estimate the median and quartiles from a cumulative frequency curve
- To be able to construct back to back box plots
- To be able to make good decisions based on averages
- To be able to solve inverse proportion problems (harder)

Links to maths Curriculum

- Cumulative Frequency
- Averages
- Boxplots
- Inverse Proportion

Suggested learning activities

Introduction

Watch the Iphone challenge video clip
Let students discuss in pairs the factors that influence when they buy and sell a smartphone
Discuss what statistics might be useful to help you make the best decision on when to buy and sell a smartphone.

Main part of lesson

The pupils will need reminding and demonstrating on how to calculate the cumulative frequency and how to construct a cumulative frequency curve. This could have been done in the previous lesson.

The pupils then calculate the cumulative frequency tables and plot the curves individually or in groups using the information for both of the handsets. Using this information estimates for the median, lower and upper quartile are obtained. The information can be used at this point to have a discussion. It is worth asking the pupils at this point which phone they think is more reliable based on the information.

Discussion point

How could you represent your conclusions in a clear and visual way? (use a box plot)

Moving on to lesson 2

Suggested learning activities

Introduction

Picking up on the end of last lesson it is important to be able to represent two sets of averages clearly so that good decisions can be made. The use of back to back box plots is an excellent way of demonstrating the differences between two sets of data.

Using this information can you clearly demonstrate why one phone is more reliable than the other? Is there any more information that you would like to have to make your argument even more conclusive?

One thing that a cumulative frequency curve won't tell you is an estimate for the mean. How could we calculate an estimate for the mean?

Main part of the lesson

The pupils will need reminding and demonstrating on how to estimate the mean from grouped data. Once an example has been delivered the pupils can estimate the mean for the two sets of data.

Discussion point.

Did your estimates for the means of Phone 1 and Phone 2 support your decision made at the beginning of the lesson?

Differentiation

For the more able pupils a link has been made between the failures of the 'Home button' on the Smartphones. This work involves inverse proportion as the more times the 'home button' is pressed the less time the phone will remain reliable.

End of lesson.

Discussion on the best time to sell/trade your phone? Is there a right/wrong answer or does it depend on your attitude to risk?