

Handling Data - Graph Work

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Sort familiar objects to identify their similarities and differences.

Count how many objects share a particular property, presenting results using pictures, drawings or numerals.

Level 1

Present outcomes using practical resources, pictures, block graphs or pictograms.

Use diagrams to sort objects into groups according to a given criterion; suggest a different criterion for grouping the same objects.

Answer a question by recording information in lists and tables.

Level 2

Answer a question by collecting and recording data in lists and tables.

Represent the data as block graphs or pictograms to show results *where one symbol or block represents one unit*.

Use ICT to organise and present data. *E.g Enter data into a simple computer database..*

Sort objects using more than one criterion *e.g. blue/not blue and triangle/not triangle*.

Understand vocabulary relating to handling data. *E.g. sort, group, set, list, table, most common, most popular*.

Answer a question by collecting, organising and interpreting data *e.g. count a show of hands to test the hypothesis 'Most children in our class are in bed by 7.30pm'. Respond to the hypothesis once the data has been collected and organised by saying whether it was true or not. Pose similar questions about their data for others to answer*.

Level 3

Processing and Representing Data

Use tally charts or frequency tables to collect data.

Construct pictograms and bar charts where the symbol represents a group of units.

Use ICT to create a simple bar chart.

Use Venn diagrams or Carroll diagrams to sort data and objects using more than one criterion. *Criterion needs to be typical of level 2 and 3 mathematics e.g. shapes sorted using properties such as right angles and equal sides.*

Answer a question by:

- Identifying what data to collect to answer the question.
- Making appropriate choices for recording data *e.g. tally chart or frequency table.*
- Deciding how best to present the data *e.g. whether a bar chart, Venn diagram or pictogram would show the information most clearly.*
- Deciding upon an appropriate scale for a graph *e.g. labelled divisions of 2, or, for a pictogram, one symbol to represent 2 or 5.*

Interpreting Data

Extract and interpret the data in tables, diagrams, tally charts, pictograms and bar charts by:

- Using a key to interpret represented data.
- Reading scales labelled in twos, fives and tens including reading between labelled divisions such as a point halfway between 40 and 50 or 8 and 10.
- Comparing data *e.g. saying how many more than and recognising the category that has most/least.*
- Responding to questions of a more complex nature *e.g. 'How many children took part in this survey altogether?' or 'How would the data differ if we asked the children in Year 6?'*

In the context of data relating to everyday situations, understand the idea of 'certain' and 'impossible' relating to probability.

Compare graphs with different scales and decide which is the most useful.

Level 4

Specifying the problem, planning and collecting data

Answer a set of related questions by collecting, selecting and organising relevant data:

Collect discrete data by:

- Suggesting possible answers and data to collect when given a problem.
- Test a hypothesis about the frequency of an event by collecting data.
- Recording it using a frequency table (tally chart).

Group data, where appropriate, in equal class intervals *e.g. decide on a suitable class interval when collecting or representing data about pupils' hours per week spent watching TV.*

Represent the data :

Choose an appropriate frequency diagram *e.g. bar chart, Venn diagram or pictogram which uses one symbol to represent 2, 5, 10 or 100.*

Construct bar line graphs by:

- deciding on an appropriate scale for a graph *e.g. labelled divisions representing 2, 5, 10, 100.*

Continue to use Venn and Carroll diagrams to record their sorting and classifying of information. *E.g. represent sorting using two criteria typical of level 3 and 4 maths such as sorting numbers using 'multiples of 8' and 'multiples of 6'.*

Interpreting Data

Find and interpret the mode and range of a set of data. *E.g. Use mode and range to describe data relating to shoe sizes in their class and begin to compare their data with data from another class.*

Interpret bar charts and bar line graphs by:

- reading between the labelled divisions *e.g. reading 17 on a scale labelled in fives.*
- Interpreting the total amount of data represented.

- Comparing data sets and responding to questions. *E.g. 'How does our data about favourite TV programmes compare to the data from Year 3 children?'*

In the context of data relating to everyday situations, understand the language of probability such as 'more likely, equally likely, fair, unfair, certain.'

Interpret simple pie charts.

Level 5

Specifying the problem, planning and collecting data

Solve problems by collecting discrete or continuous data.

Ask questions, plan how to answer them and collect the data required.

Representing the Data

Understand and use the 'mean' of discrete data *e.g. use the mean of a set of measurements from a science experiment or from P.E. - timed sprints.*

Construct bar line graphs with grouped discrete data.

Create line graphs where the intermediate values have meaning *e.g. time-distance graphs or conversion graphs.*

From the Key Stage 3 Programme of Study:

Understand and use the probability scale from 0-1

Use methods based on equally likely outcomes and experimental evidence, as appropriate, to find and justify probabilities *e.g. compare two spinners to find which is more likely to result in an even number.*

Interpreting Data

Complete a two-way table given some of the data (Like a Carroll diagram but with only one piece of data in each section).

Interpret bar line graphs with grouped data.

Interpret and compare pie charts where it is not necessary to measure angles.

Read between labelled divisions on a scale *e.g. read 34 on a scale labelled in tens or 3.7 on a scale labelled in ones, and find the difference to answer 'How much more?'*

Recognise the difference between discrete and continuous data.

Recognise when information is presented in a misleading way *e.g. compare two pie charts where the sample sizes are different.*

Understand and use the mode, range, median and mean.

- solve problems such as *'Find five numbers where the mode is 6 and the range is 8.*

When drawing conclusions, identify further questions to ask.