How much do I know?

Statistics (Handling data)

**Try this first:**

Alfie asks some boys and girls about their favourite hobby. He shows the results on a graph.



(a) The graph shows that **44%** of boys chose sport. Estimate the percentage of **girls** who chose sport.

(b) **120** boys chose reading.   Estimate the **number** of boys who chose **cinema**.

**Answers:**

(a) Between 25% and 30%

(b) Between 44 and 52

**What is this topic?**

Statistics (or Handling Data) is all about the collection, organization, representation and interpretation of data.

Collection of data is usually by means of a questionnaire or a tally chart, as shown below

|  |  |  |
| --- | --- | --- |
| Favourite colour | Tally | Frequency |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Representation can be in the form of bar charts, pictograms, pie charts, line graphs, Venn diagrams and Carroll diagrams.

**Bar charts** use columns or bars with a constant width. Frequencies are represented by the heights of the bars. For **discrete** data (i.e. things that can be counted) there should be gaps between the bars. For **continuous** data (things that can’t be counted, e.g. measurements) there is no gap between the bars. The chart is then more properly called a **histogram**.

**Pictograms** use little pictures or icons to show data. They must always include a key.

**Pie charts** use sectors of a circle (or slices of a pie) to show data. The size of each sector indicates the frequency. The sum of all the angles at the centre must total 3600.

**Line graphs** use points joined by straight lines to show the relationship between two things (variables), one on each axis.

**Venn diagrams** use circles to sort things into groups called sets.

**Carroll diagrams** usea grid (or two-way table) to sort things.

There are three different measures of the average value of a set of data:

* **Mean,** which is where you add up all the values and divide by how many there are.
* **Median,** which is the middle value when they are all in order.
* **Mode,** which is the value that occurs most often.

The **range** of a set of data is the biggest value minus the smallest.

**Questions**

**Q1.**

In a survey people were asked if they like tea and coffee. The results are shown in this Venn diagram.



(a) What **percentage** of people in the survey like **both** tea and coffee?

(b) What **percentage** of people in the survey do **not** like coffee?

**Q2.**



Carol counts the matches in **10** boxes.  She works out that the **mean** number of matches in a box is **51**

Here are her results for **9 boxes**.



Calculate how many matches are in the **10th box**.

**Q3.** Sarah makes a pie chart to show the proportion of boys and girls in her class.

|  |  |  |
| --- | --- | --- |
|  | Number in class | Size of angle on pie chart |
| Boys | 14 | 1440 |
| Girls | 21 | 2160 |



The next day another **boy** joins Sarah's class. She makes a new pie chart.

 Calculate the angle for **boys** on the new pie chart.

**Q4.** This chart gives the cost of showing advertisements on television at different times.

|  |
| --- |
|   |
|  |

(a) An advertisement lasts **25 seconds.** Use the graph to estimate how much **cheaper** it is to show it in the **daytime** compared with the **evening.**

(b) An advertisement was shown in the **daytime** and again in the **evening.** The total cost was **£1200.**How long was the advertisement in seconds?

**Answers**

**1.** (a) 36% (b) 46%

**2**. 52

**3.** 1500

**4.** (a) Between £540 and £560. (b) 15 seconds

**Do you need more information?**

Refer to **Mathematics Explained for primary teachers** by Derek Haylock, Section E, pages 339 to 378.