

## Pie Charts and Correlation

### Calculating angles for a pie chart:

1. Find the total of the items listed
2. Find the fraction of the total for each item
3. Multiply the fraction by 360 degrees and this will give you the angle.

For example; In a survey people were asked what their favourite sport was. This table displays the results:

Sport	Frequency
Football	30
Cricket	25
Tennis	10
Netball	5
Rugby	22

By adding up the frequency we can see that the total number of people asked was 92. Therefore we can do the following sums:

$$30/92 \times 360 = 117 \text{ degrees}$$

$$25/92 \times 360 = 98 \text{ degrees}$$

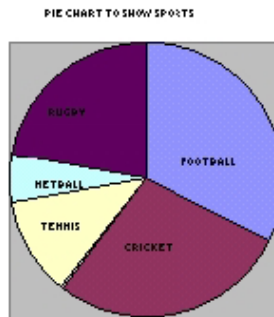
$$10/92 \times 360 = 39 \text{ degrees}$$

$$5/92 \times 360 = 20 \text{ degrees}$$

$$22/92 \times 360 = 86 \text{ degrees}$$

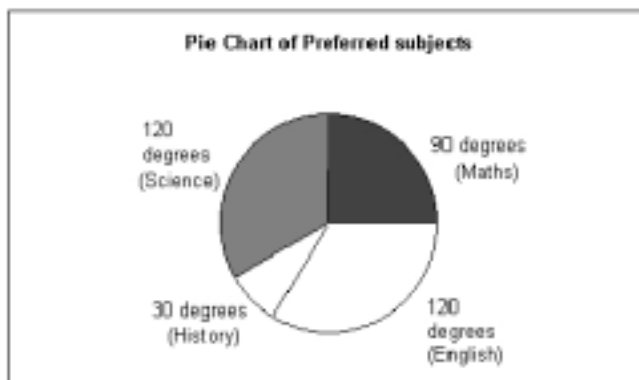
$$\text{TOTAL} = 360 \text{ degrees}$$

Using these angles we can now make our pie chart.



### Interpreting Pie Charts: An Exam Question:

The pie chart below shows which subjects were preferred by pupils at Whitbury Secondary School. If 48 pupils chose Maths, how many pupils said they preferred English?



Step one: If 90 degrees equals 48 children then 1 degree must be  $48/90 = 0.533333$  recurring.

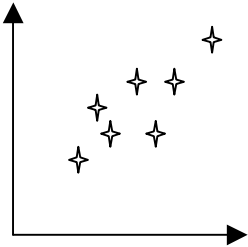
Step two: Therefore, English must be 120 lots of 0.53333 (do not round this number off).

Step Three: So,  $120 \times 0.53333... = 63.999996$ , which rounded up is 64.

Step Four: English must have been chosen by 64 pupils.

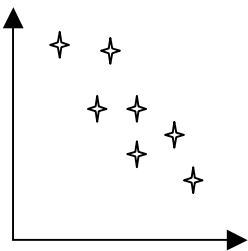
A disadvantage of pie charts is that they involve some rounding. A bar chart is always more accurate!

## Correlation




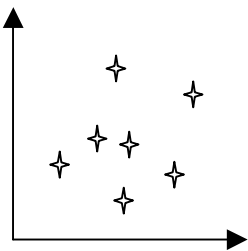
This is an example of **positive correlation**. Both the variables are increasing. If the points are almost a straight line it is said to have a **high positive correlation**.

ICE CREAM SALES  TEMPERATURE



This is an example of **negative correlation**. One of the variables is increasing while the other is decreasing. This particular graph is an example of **high negative correlation**.

SOUP SALES  TEMPERATURE



This is an example of **zero correlation**. There is little or no correlation between the two variables.

BREAD SALES  TEMPERATURE

For further information on correlation look at pages 367-368 in the 'London GCSE Mathematics Intermediate Course'.

For further information on pie charts look at pages 362-366 in the same text book.