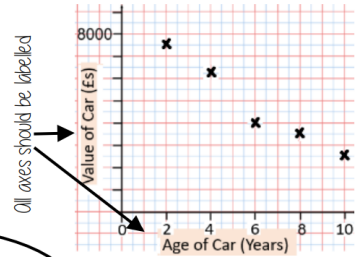
Draw and interpret a scatter graph

Age of Car (Years)	2	4	6	8	10
Value of Car (£s)	7500	6250	4000	3500	2500

- This data may not be given in size order
- The data forms information pairs for the scatter graph
- Not all data has a relationship



"This scatter graph show as the age of a car increases the value decreases"

The link between the data can be explained verbally

The axis should fit all the values on and be equally spread out

Linear Correlation

As one variable increases so does the other variable

As one variable increases the other variable decreases

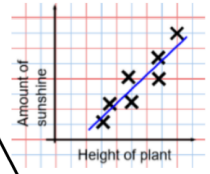
There is no relationship between the two variables

The line of best fit

The Line of best fit is used to make estimates about the information in your scatter graph

Things to know:

- The line of best fit DOES NOT need to go through the origin (The point the axes cross)
- There should be approximately the same number of points above and below the line (It may not go through any points)
- The line extends across the whole graph



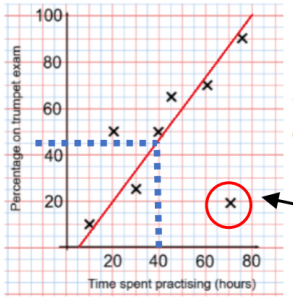
It is only an estimate because the line is designed to be an average representation of the data

It is always a straight line.

Using a line of best fit

Interpolation is using the line of best fit to estimate values inside our data point

e.g 40 hours revising predicts a percentage of 45



Extrapolation is where we use our line of best fit to predict information outside of our data

This is not always useful – in this example you cannot score more that 100%. So revising for longer can not be estimated

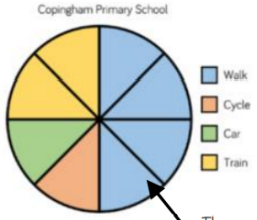
This point is an "outlier"
It is an outlier because it doesn't fit this model and stands apart from the data

Read and interpret pie charts

Always read the data for the total amount the pie chart represents

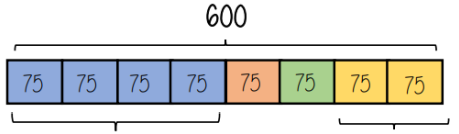
There are 360° in a circle

Copingham Primary School has 600 students



There are 8 equal sectors in this pie chart

This bar model represents the information in the bar chart



Walking represents half of this data

Train represents a quarter of this data

Draw pie charts

Type of pet	Dog	Cat	Hamster
Frequency	32	25	3

There were 60 people asked in this survey (Total frequency)

$\frac{32}{60}$ "32 out of 60 people had a dog"

This fraction of the 360 degrees represents dogs

$\frac{32}{60} \times 360 = 192°$

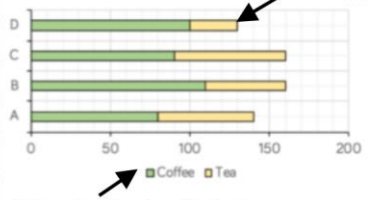
Use a protractor to draw This is 192°

Multiple method
Os 60 goes into 360 – 6 times
Each frequency can be multiplied by 6 to find the degrees (proportion of 360)

Bar and line charts

Compare the bars green compared to yellow. The size of each bar is the frequency
Overall total easily comparable

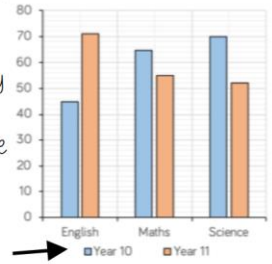
Composite bar charts



Categories clearly indicated

Dual bar charts

Bars are compared side by side
Easier to compare subgroups



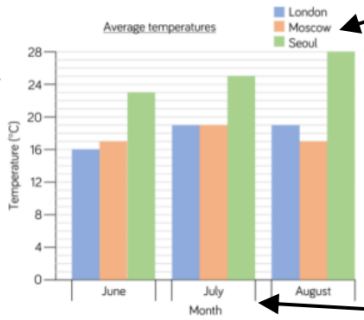
Categories clearly indicated

Multiple Bar chart

Compares multiple groups of data

- Clearly labelled axes
- Scale for axes
- Comparable data bars drawn next to each other

Key/ Colour code for separate groups of information



Gap between different categories of data

Histograms

Two differences between histograms and bar charts:

1) The vertical axis on a histogram shows the frequency density not frequency.
2) The bars on a histogram can be different widths

Frequency Density = Frequency ÷ Class Width

Frequency = Frequency Density × Class Width = Area of Bar

Height (h cm)	Frequency	Frequency Density
$0 < h \leq 20$	16	0.8
$20 < h \leq 25$	20	4
$25 < h \leq 40$	30	2
$40 < h \leq 50$	2.5	2.5

Add a frequency density column

Area = 2.5 x 10 = 25
= Frequency