Name_____

Trilogy Skills Revision Guide FOUNDATION

- **State variables in an investigation**

  Independent – The variable you purposefully change
  Dependent – The variable you measure and record in your table
  Controls – Anything factor that is kept the same to ensure the results can be compared

  Q. Why does the student keep the volume of acid the same?
  A. So the results can be compared YOU CANNOT SAY FAIR TEST

- **Describe how to make a prediction**

  To make a prediction you follow the format below, it does not matter if you prove it to be correct or not.
  As the independent variable increases I think the dependent variable will increase/decrease.

- **Draw a table**

  Simple table with one repeat

Independent Variable (units)	**Dependent Variable (units)**

  Table with repeats

Independent Variable (units)	**Dependent Variable (units)**			
	1	**2**	**3**	**Mean**

- **Describe how to calculate a mean**

  You must exclude the **anomalies** from the mean.

  $\frac{(42+45)}{2} = 43.5$

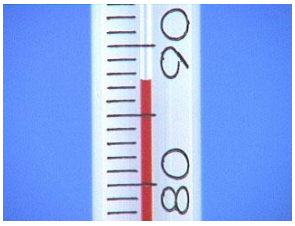
Independent Variable (units)	**Dependent Variable (units)**			
	1	**2**	**3**	**Mean**
	42	**45**	**56**	

- **Describe how to write a method**

  Method checklist:
  Name all equipment and sizes e.g. 25ml measuring cylinder
  The names of any chemicals used
  Describe how to complete the practical so someone else can follow it

- **Define resolution of equipment**

  Resolution is the smallest detectable change.



This thermometer has a resolution of 0.5°C. The smallest detectable change is 0.5°C.

This thermometer has a resolution of 0.1°C. When the number increases, it increases by 0.1°C.

- **Describe how to complete a risk assessment**

Hazard	Risk	Precaution
Broken glass	Cutting yourself	Ensure glass wear is carried carefully and used in the middle of the bench.

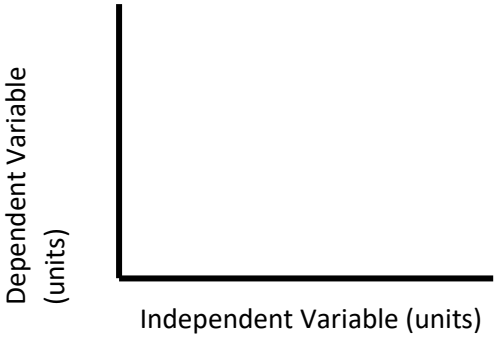
- **Explain when to use a certain graph**

The type of graph depends on the type of data that needs to be represented.

Categoric data e.g. favourite type of crisps, blood type, type of flowers, name of pupil
Bar chart, pie chart, pictograms.

Continuous data (any number including decimals) e.g. rate of gas production, temperature, height
Scatter graph, Line graph

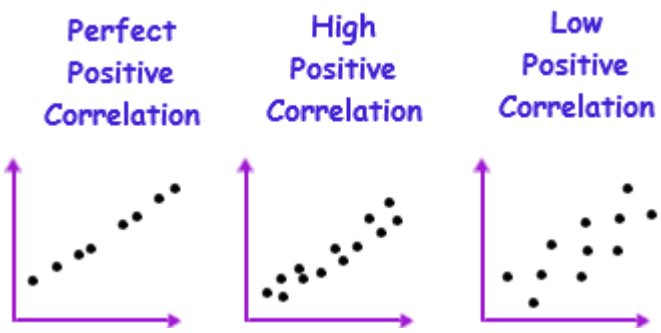
- **Layout the axis of a graph**

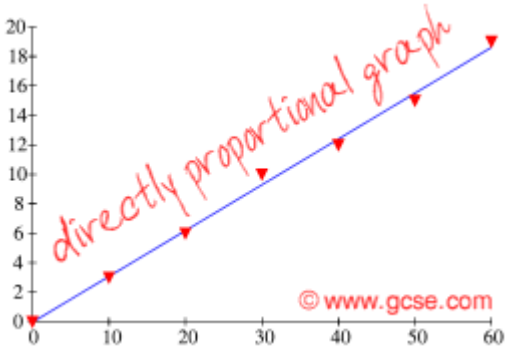


- **Describe different patterns in data**

Positive correlation is anything where the dependent variable increases as the independent variable increases.
e.g. As the volume of acid added is increased, the volume of hydrogen produced increases.

Directly proportional is a special type of positive correlation when the independent variables doubles, the dependent variable doubles.

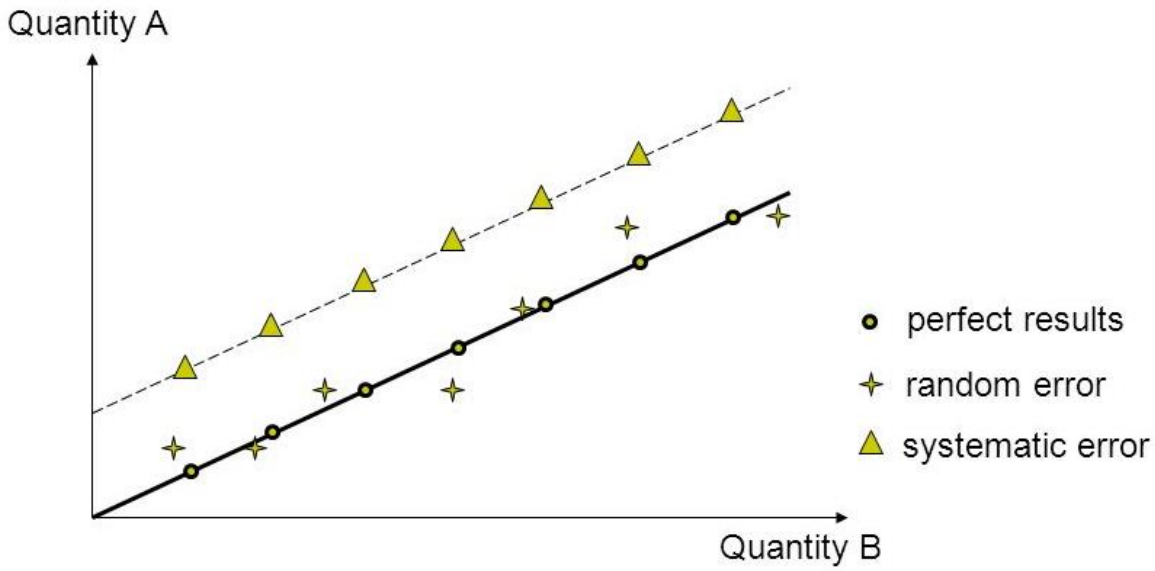




- **Explain different types of error**

  Random error (sometimes called human error). This is a result of poor measurement and usually causes anomalies in repeat readings.

  Systematic errors. These result from methods or equipment being consistently incorrect on every reading. This could be inaccurate equipment or equipment poorly calibrated. These are harder to detect from your results.



- **Describe how to ensure accuracy**

  Accuracy is how close the experimental value is to the true value. To be able to determine this you may have to calculate the true value and compare your results to it. You can compare your points to a line of best fit to discuss accuracy. You can ensure you are using equipment with the lowest resolution to ensure accuracy e.g. if you are measuring 25ml of liquid, you would not use a 100ml measuring cylinder. You would reduce any possible systematic errors.

- **Describe how to ensure precise, repeatable results**

  Precise results have little spread around the mean, so constantly getting very similar results when an experiment is repeated. This also makes them **repeatable**. You can ensure precise and repeatable results by completing repeats and reducing random error e.g. measuring chemicals correctly, timing correctly etc.

- **Describe how to analyse reproducibility**

  Results are **reproducible** if you compare with a different group, they may have used different equipment that have investigated the same hypothesis and got similar result. The individual results do not have to be the same, just the pattern seen.