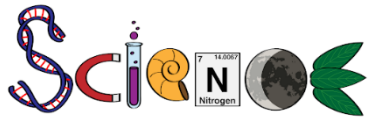# Conclusions
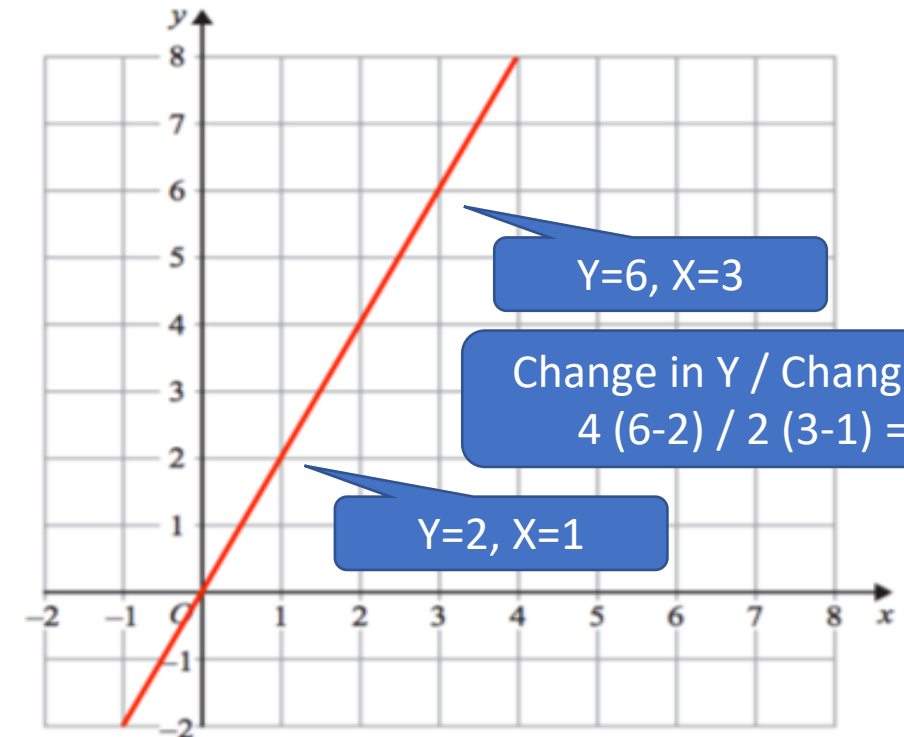
Lesson 11 – How Science Works
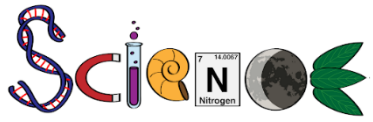
Graph Re-Cap

Calculate the gradient of the graph

Change in Y / Change in X

Y=6, X=3

Change in Y / Change in X
4 (6-2) / 2 (3-1) = 2

Y=2, X=1

Scientific Report

There are a few different ways people write reports

However most follow the same basic structure:

1. ***Title*** ▯ Describes what is being investigated

2. ***Aim*** ▯ Sometimes included to expand on the title

3. ***Prediction/Hypothesis*** ▯ Important to state what you think will happen

4. ***Method/equipment*** ▯ How the experiment will be carried out

5. ***Results*** ▯ This is your data from your ***dependent*** variable

6. ***Conclusion*** ▯ The focus for today: **Looking at your results closely**

7. ***Evaluation*** ▯ More on this next lesson (assessing your experiment)

Example

Plateau

Rate of photosynthesis in arbitrary units
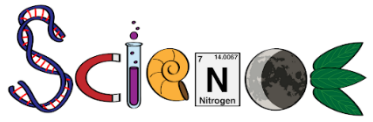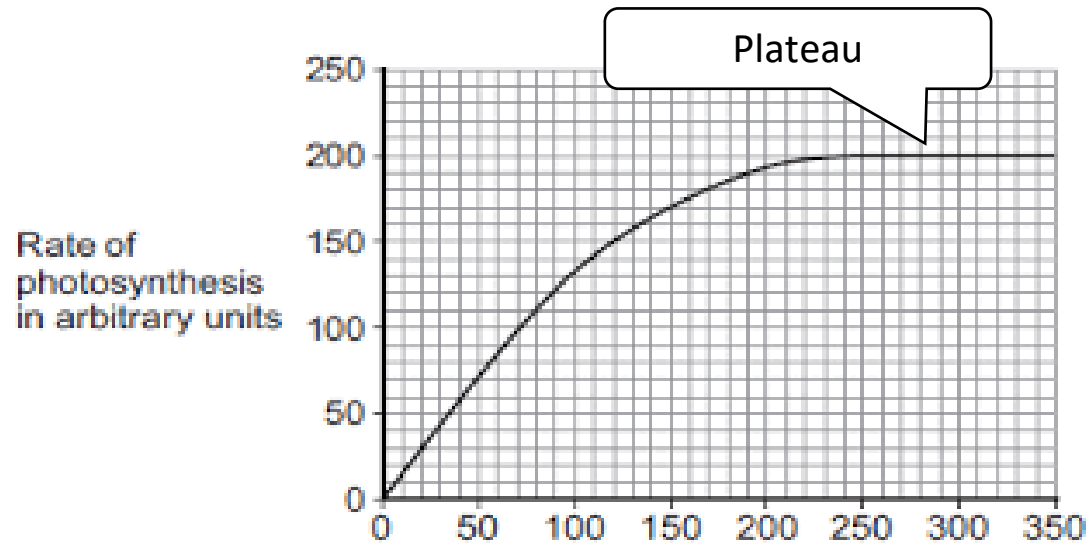
Photosynthesis example:

As light intensity increases from 0 to 200 units, the rate of photosynthesis increases.

However, increasing the light intensity past 250 does not increase the rate of photosynthesis.

How is a conclusion different to this?

- Describing the trend of a graph is basically the conclusion!

- You should look at the results and say what happened

- In some cases, you may be able to say '*why*' this was

- But in most instances it is acceptable to simply describe
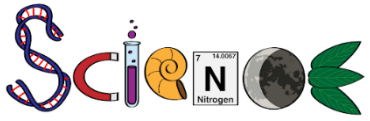
Conclusion Definition:

A conclusion identifies what has been learned from the investigation and may agree or disagree with the prediction made during planning.

A **CONCLUSION** should start:

As _____ increases, _____ _____

Write what the independent variable is here

Write what the dependent variable is here

Choose the right word: increases, decreases or stays the same

NEVER use the word **IT** in a conclusion.

As the area increases, *it* increases.

What increases?

If there is any doubt you won't get credit for your answer.
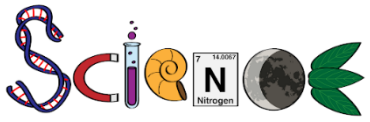
Let's have a go ourselves!
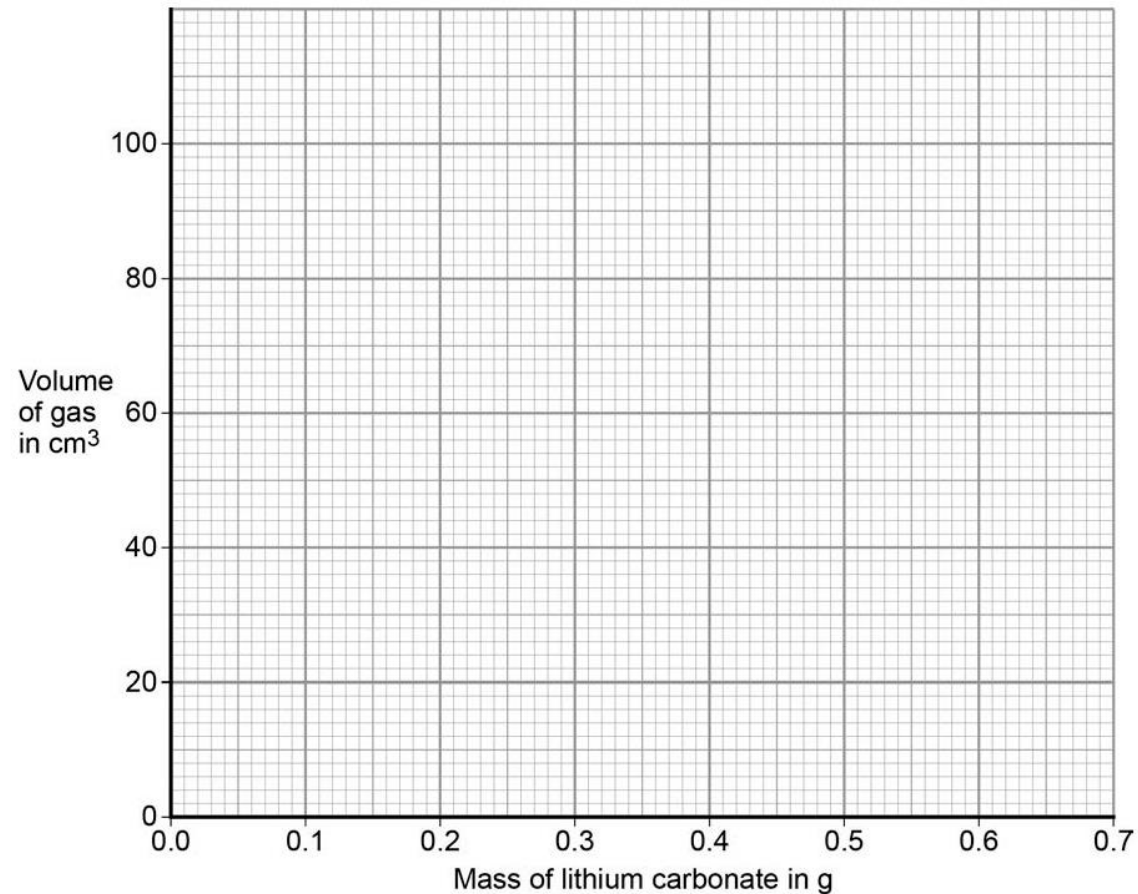
How does mass of lithium affect the volume of gas produced?

Mass of lithium carbonate in g	Volume of gas in cm^3
0.0	0
0.1	22
0.2	44
0.3	50
0.4	88
0.5	96
0.6	96
0.7	96

As the mass increases, the volume of gas increases.

However, increasing the mass above 0.5 doesn't effect the volume of gas as it plateaus (levels off).

A **CONCLUSION** should start:

As _____ increases, _____ _____

↑ Write what the independent variable is here

↑ Write what the dependent variable is here

↑ Choose the right word: increases, decreases or stays the same
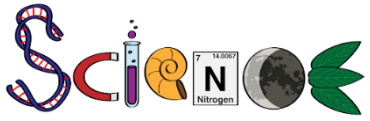
Mass of lithium carbonate in g	Volume of gas in cm³
0.0	0
0.1	22
0.2	44
0.3	50
0.4	88
0.5	96
0.6	96
0.7	96

Let's have a go ourselves part 2!

We are going to look at an experiment where the wind speed varied

About 100 m high
Much greater, stabler wind speed

About 10 m high
Lower wind speed
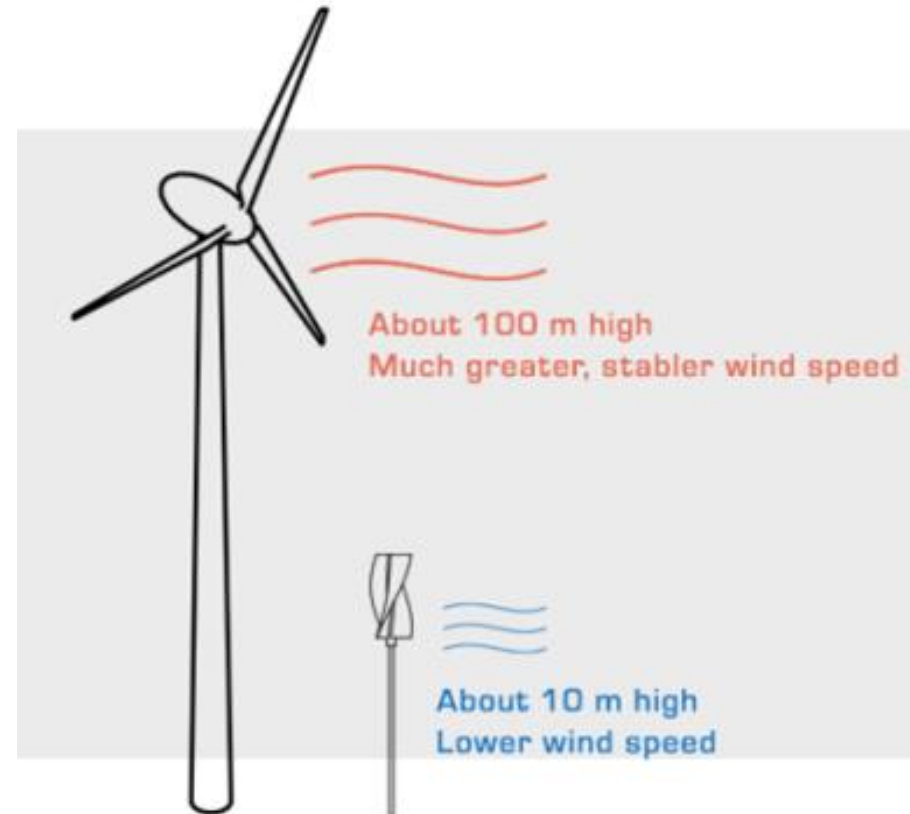
And a graph was plotted showing the amount of electricity generated as the wind speed changed

How does wind speed affect the power output?

As the wind speed increases the power output increases.
(up to 14/15 meters per second)

Between 15-25 m/s the wind turbine is working at its maximum power output (of 3000kW)

At wind speeds exceeding (above) 25 metres per second the power output drops to zero.
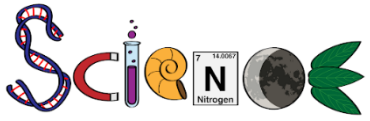
A **CONCLUSION** should start:

As _____ increases, _____ _____

↑ Write what the independent variable is here

↑ Write what the dependent variable is here

↑ Choose the right word: increases, decreases or stays the same

Power output in kilowatts

3000

2500

2000

1500

1000

500

0

0   5   10   15   20   25

Wind speed in metres per second

How does the distance of a lamp from a solar cell affect the current and potential difference?

A **CONCLUSION** should start:

As _____ increases, _____ _____

↑ Write what the independent variable is here

↑ Write what the dependent variable is here

↑ Choose the right word: increases, decreases or stays the same

As the distance from the solar cell increases from … to … the potential difference…

Distance from solar cell (cm)	Potential Difference (V)			
	1	2	3	Mean
5	10.10	9.90	10.20	
10	2.60	2.40	2.70	
15	1.05	1.12	1.08	
20	0.67	0.72	0.63	
25	0.42	0.39	0.41	

How does the distance of a lamp from a solar cell affect the current and potential difference?

A **CONCLUSION** should start:

As _____ increases, _____ _____

↑
Write what the independent variable is here

↑
Write what the dependent variable is here

↑
Choose the right word: increases, decreases or stays the same

As the distance from the solar cell increases from … to … the potential difference…

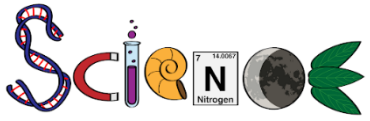| Distance from solar cell (cm)	Potential Difference (V)			
	1	2	3	Mean (to 1 d.p)
5	10.10	9.90	10.20	**10.1**
10	2.60	2.40	2.70	**2.6**
15	1.05	1.12	1.08	**1.1**
20	0.67	0.72	0.63	**0.7**
25	0.42	0.39	0.41	**0.4**

Longer answer Conclusions

- As you work towards GCSE's, a one line conclusion isn't quite long enough

- So you need to give more detail

- To help with this you can use the PEEL structure
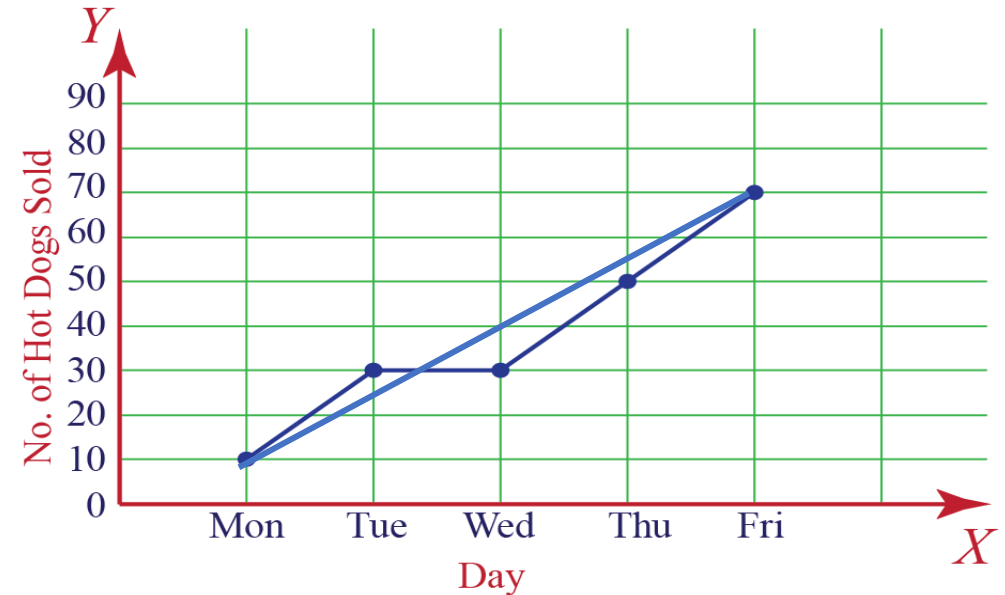
P = Point

E = Evidence

E = Explain

L = Link (e.g. to prediction)

Example PEEL Conclusion:

Point → The graph shows that there were more   hot dogs sold towards the end of the week than at the beginning

Evidence → For example, only 10 hot dogs were sold on Monday but 70 were sold on Friday

Explain → This is because more people found out about the new hot dog stand

Link → And so told their friends about it who then also purchased hot dogs

Hot Dogs Sold per Day