·
THE SCIENTIFIC METHOD

THE SCIENTIFIC METHOD

* set of steps that all research must follow



Click here to watch Tim and Moby discuss the scientific method on BrainPop

Click here to watch a video clip from teacher tube.

 $http://teachertube.com/viewVideo.php?video_id=114538\&title=Scientific_Method_Everyday$

THE SCIENTIFIC METHOD
ASK A QUESTION

ASK A QUESTION

- * The question is based on your observations (both qualitative and quantitative). Who, What When, Where, How, Why
- * The question must be about something that can be measured or experimented on.

Write 3 questions that you could do an experiment about. They should end with a question mark!!

1)

2)

3)

THE SCIENTIFIC METHOD		
	ASK A QUESTION	
	RESEARCH THE QUESTION	

RESEARCH THE QUESTION

- * Don't start from scratch.
- *Look up what is already known about your question.
- *Use the internet, library, and other scientists.

Use a table with question words:

Who:

What:

Where:

When:

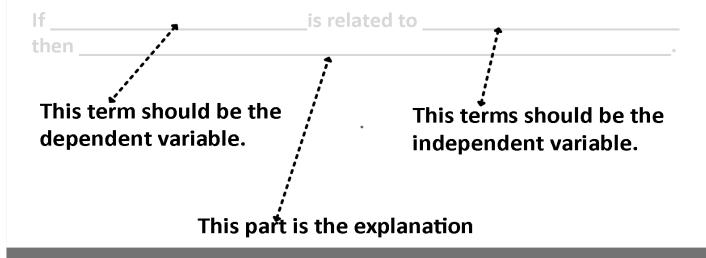
Why:

How:

THE SCIENTIFIC METHOD ASK A QUESTION RESEARCH THE QUESTION WRITE A HYPOTHESIS

WRITE A HYPOTHESIS

- * Your best guess about what will happen based on your observations
- * Must be testable by making an experiment.
- * A STATEMENT about what will happen and WHY.



Writing a Hypothesis

- 1. Coffee may stunt your growth.
- 2. The size of a leaf may affect the size of the tree.
- 3. The depth of the water may affect the color of fish.
- 4. Bacterial growth may be affected by temperature.
- 5. Ultra violet light may cause skin cancer.
- 6. Temperature may cause leaves to change color.

Let's rewrite these as hypotheses...

1. If	is related to	
then		·
2. If	is related to	
then		<u> </u> •
3. If	is related to	
then		·

Answers				
Let's rewrite these as hype	otheses			
	is related todrinking coffee hks a lot of coffee will be short			
	is related toleaf size eaves will grow tall			
3. Iffish color is related todepth of water thenfish who live in deep water will be a dark color				

THE SCIENTIFIC METHOD ASK A QUESTION RESEARCH THE QUESTION WRITE A HYPOTHESIS EXPERIMENT

EXPERIMENT

- * A test to see whether your hypothesis is right or wrong.
- * Must be Fair.
- * Only one factor should be changed. Everything else must stay the same.
- * The factor you change is called the variable.
- * The factors you don't change are the controls.
- * Repeat the experiment over and over to make sure the results are not a mistake.

THE SCIENTIFIC METHOD ASK A QUESTION RESEARCH THE QUESTION WRITE A HYPOTHESIS EXPERIMENT COLLECT DATA

COLLECT DATA

- * Keep a science journal with all the details of your experiment.
- * Write down everything you do.
- * Make all measurements and record them.

THE SCIENTIFIC METHOD ASK A QUESTION RESEARCH THE QUESTION WRITE A HYPOTHESIS EXPERIMENT COLLECT DATA ANALYZE DATA

ANALYZE DATA

- * Go back through your science journal and look at your data.
- * Place the data into tables and graphs to be able to "see" what happened.

THE SCIENTIFIC METHOD ASK A QUESTION RESEARCH THE QUESTION WRITE A HYPOTHESIS EXPERIMENT GATHER DATA ANALYZE DATA MAKE A CONCLUSION

MAKE A CONCLUSION

Compare your results to your hypothesis

Does your hypothesis match your results?

YES?

your experiment is ready to be repeated by other scientists and yourself

your experiment needs
modified to see if you
can get the hypothesis
and result to match

Communicate your results in a final paper or project.

How much do you know about the scientific method?

Click here for a Quiz!!
 http://www.brainpop.com/science/scienti
 ficinquiry/scientificmethod/quiz/