What is science?

- Science is a body of knowledge that is constantly changing & growing

- comes from the Latin word "scire" which means "to know"

- it is an orderly way of solving problems called the scientific method

- scientists are curious, observe the world around them, & question things based on their observations

- they attempt to find answers to their questions

- the goal of science is to understand the world around us

Three main branches of science: life science, physical science, & earth science

Branches of life science (biology): zoology (study of animals), anatomy (study of structures of animals or plants), physiology (study of functions/activities of living things & their parts), botany (study of plants), ecology (study of relationships between organisms & their environment), & microbiology (study of microorganisms)

Scientific Method	
Question	Queens
Research	Ride
Hypothesis	Horses
Experiment	Every
Analyze Data	Afternoon
Conclusion / Communicate	Carrying
Retest	Riches

Scientific Method

- It all starts with observing the world around us and questioning things.

- It is a series of steps used to answer a question or solve a problem.

- does not have to be used in the same order every time

Question (Problem)

Queens

- It all starts with observations

- use all 5 senses

- make accurate observations

- these observations lead to questions

- something you want to find the answer to

Research

Ride

- You need to find out all you can about your topic/problem/subject

- Use globes, textbooks, computer/ internet, experts, newspapers, library, encyclopedias

- Make sure it is accurate & up to date/ current

In Notebook Scientific Method Notes

- Must first have a question
- Example questions
  - Which watering schedule is best for growth of a fig plant?

skip line

- Which brand of fertilizer is best for tomato plant growth?

skip line

Hypothesis

Horses

- Possible explanation or answer to a question.

- Educated guess based on observations & research. Do not use I think or I believe

- Must be testable by experimentation

- Must tell why; needs to include "because"

-Miracle Grow will grow the best tomatoes because it has the most nitrogen.

Experiment

Every

-To test a hypothesis, scientist must first identify the factor (variable) that they are testing

-A good experiment requires a lot of planning, including a detailed procedure

-See notebook for detailed notes on the parts of an experiment

Controlled experiment - tests only 1 variable/factor at a time. It has 2 parts or groups

1) Experimental Group - the group with the variable. It has several different types of variables

- Independent (manipulated) variable - what you are testing or doing differently on purpose

ex. → brands of fertilizer; amount of mentos

Thing that I can change.

- Dependent (responding) variable - what you measure; depends on the independent variable

# of blooms, height of plants; color of plants; size of tomato; # of tomatoes; # of leaves

[choose one dependent variable] Data

- control variables - things you do to keep the experiment fair; the same for all

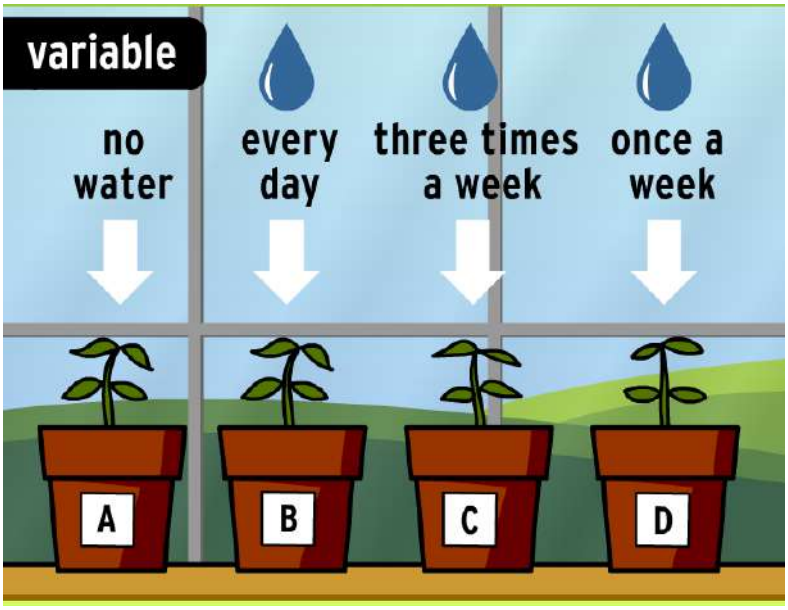
ex. - amt of fertilizer, amt of sunlight, amt of water, type of plant, type of pot, type + amt of soil, temp

All for one, & one for all.

- Experimental Group - has independent variable

2) Control Group - does not have independent variable, purpose is to see if independent variable has an effect

ex → no fertilizer



Analyze Data → Afternoon

-2 types of data

1) qualitative - data you gather using your senses; data in words from observations
ex. a red, yellow, & blue striped shirt; tomatoes were healthy & large

2) quantitative - data in numbers
ex. the shirt had 3 colors; 5 tomatoes & 4 blooms

-collect data & organize it in a chart/table
-turn chart/table into graph & look for patterns

conclusion/communicate

-prove or disprove your hypothesis
-answer your question & tell why
-use data to prove your answer

-share knowledge with others

Retest
- to see if get same results & if data is correct
- the more you retest, the more accurate the experiment will be