

CLASS SCHEDULE

NAME: _____ EMAIL ADDRESS: _____

SCHOOL: _____ GRADE: _____ CELL: _____

Semester/Quarter

Period	From/To	Subject	Rm #	Instructor	Days

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Unit 1 : Scientific Inquiry

A B C • Qualitative - use words or senses.

1 2 3 • Quantitative - use numbers
 ↑
 number (think quantity)

• A testable question includes the relationship between the independent (manipulated) variable and dependent (responding) variable.

Scientific Investigations

Step 1: Determining a testable question.

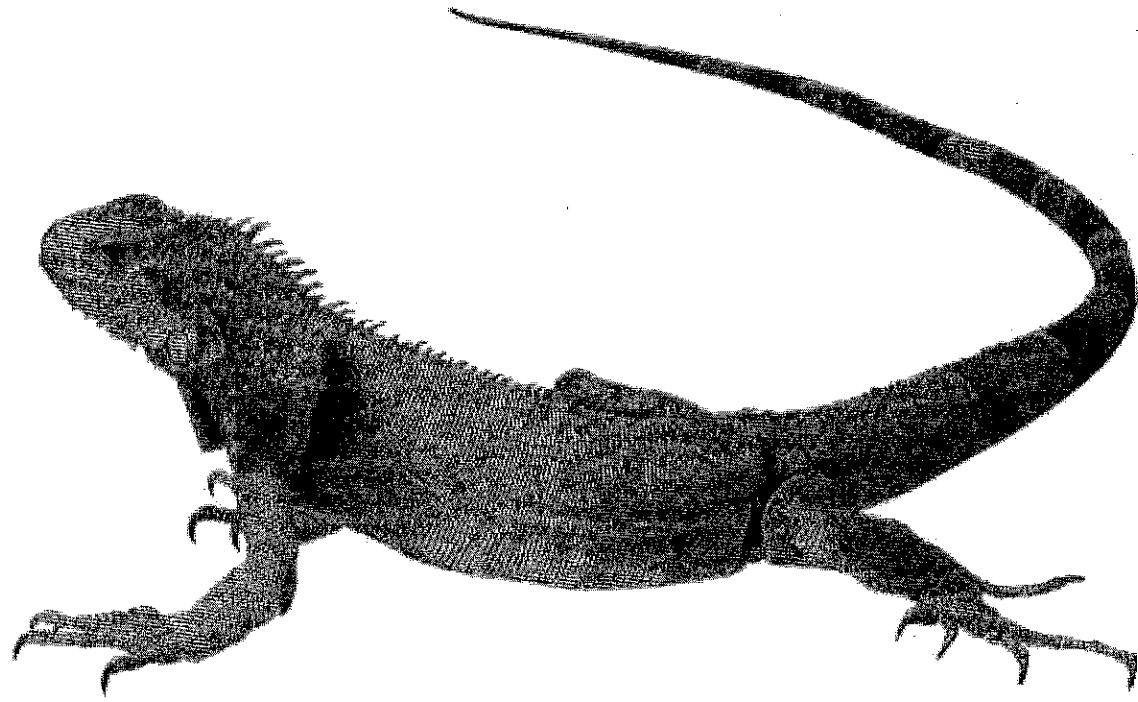
- independent variables are what we change in the experiment.

- dependent variables are the results from what we've changed.

• Example:

Does fertilizer make plants grow bigger?

<u>independent</u>	<u>dependent</u>
amount of fertilizer	size of plant



Qualitative

- Spiny
- stripes on his tail
- scaly
- sharp claws

Quantitative

- 5 toes
- about 3 feet long
- 2 eyes
- 1 mouth

- control variables are kept the same in an experiment

Example:

What chips contain the most grease?

independent	dependent	control
- brand of chips	- amount of grease	- how you measure grease - weight (grams) of chips

- hypothesis - a statement that predicts what will happen (usually an "If, then" statement).

How does the temperature of a tennis ball affect the height of its bounce?

I	D	C
temperature of ball	Height of bounce	<ul style="list-style-type: none"> • type of ball (brand) • age/use of ball

Hypothesis: If I put a tennis ball in the freezer over - night, then I think it will bounce less than a ball at room

Which stays fresher longer: organic or non-organic fruit?

I	D	C
how fruit was grown (type of fruit)	Days it stays fresh	Fruit (apple/banana) when it was picked where it was grown

Hypothesis: If I let an organic banana and a non-organic banana sit on the kitchen counter, then the organic banana will stay fresher longer.

How does the type of light affect how quickly a plant will grow?

I	D	C
Type of light	Speed of plant growth	<ul style="list-style-type: none"> • type of plant • amount of water

Scientific Investigations

Scientific Method

1. Identify a testable question (tests one variable) that can be investigated
2. Research information about the topic
3. State the hypothesis (If...then)
4. Design an experiment to test the hypothesis, controlling all variables except the independent (manipulated) variable
 - Plan for independent (manipulated), dependent (responding) variables and factors that should be held constant (controlled variables)
 - List the materials needed to conduct the experiment
 - List the procedures to be followed
 - Plan for recording, organizing and analyzing data
5. Analyze the data in the tables, graphs, or charts to figure out what the data means (describe the relationship between the variables)
6. Compare the results to the hypothesis and write a conclusion that will support or not support the hypothesis based on the recorded data
7. Communicate the results to others

Mythbusters Balloon Lift

Question

→ Can a child get airborne holding balloons?

Hypothesis

→ If I give a ^{4lb} child 2,070 balloons, then they will become airborne because 4lb Variables balloons lifted 1lb.

<u>I</u>	<u>D</u>	<u>C</u>
- number of balloons	- The child off the ground	- 11" party balloons - child - way balloons are tied together

Analyze Results: Making a line graph

Dependent

Responding

Y-axis

Manipulated

Independent

X-axis

- inference - an explanation or interpretation of an observation based on prior experiences or supported by observations made in the investigation

Technological Design

- Technology is any tool or process designed to help society in some way.

- Technological design is the process of using scientific knowledge to develop technology.

- A scientific model is an idea that allows us to create explanations of how something may work.

Steps:

1. Gather information about a problem
2. Brainstorm ideas for possible solutions or products.
3. Build and test your data.