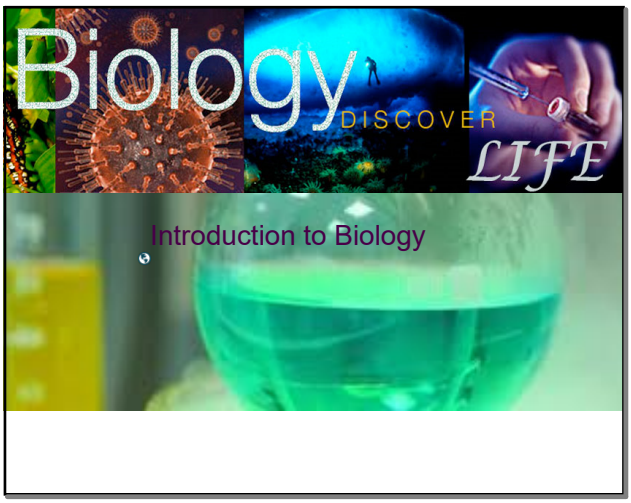

Aug 14-10:18 AM

Scientific Statements:

Aug 14-9:18 AM

Scientific Statements:
- can be tested

Aug 14-9:18 AM

Which statements are scientific?

- Cheetahs run faster than wolves.
- Cheetahs are prettier than wolves.
- It is wrong for cheetahs to kill wolves.
- Cheetahs are endangered because God is punishing them.

Aug 14-10:26 AM

Scientific Statements:
- can be tested

Aug 14-9:18 AM

Scientific Statements:
- can be tested
- aren't subjective

Aug 14-9:18 AM

Which statements are scientific?

- Red is a better color than blue.
- Red flowers attract hummingbirds more than blue flowers do.

Aug 14-10:30 AM

Scientific Statements:
- can be tested
- aren't subjective

Aug 14-9:18 AM

Scientific Statements:
- can be tested
- aren't subjective
- aren't opinions

Aug 14-9:18 AM

Which statements are scientific?

- Dogs are better pets than cats
- Male guppies are prettier than females.

Aug 14-10:34 AM

Scientific Statements:
- can be tested
- aren't subjective
- aren't opinions

Aug 14-9:18 AM

Scientific Statements:
- can be tested
- aren't subjective
- aren't opinions
- are independent of morals

Aug 14-9:18 AM

Which statements are scientific?

- Its a sin to cheat.
- It is good to give to charity.
- People who give to charity feel better about themselves.

Aug 14-10:37 AM

Scientific Statements:

- can be tested
- aren't subjective
- aren't opinions
- are independent of morals

attributes

Aug 14-9:18 AM

Characteristics of Life:




vs


Aug 14-9:32 AM

Characteristics of Life:

- respond to the environment
- made of cells
- require energy for metabolism
- grow and develop
- reproduce
- pass on traits (heredity)

Aug 14-9:32 AM

Objective 1 - 4 Review

1. How do scientific statements differ from non-scientific statements?
2. What do biologist study?
3. What is an organism?
4. What are the characteristics of living things?

Aug 23-7:30 AM

The Scientific Method

Aug 14-9:58 AM

The Scientific Method

Observation:

Aug 14-9:58 AM

The Scientific Method

Observation: what you notice

Aug 14-9:58 AM

The Scientific Method

Observation: what you notice

Inferences:

Aug 14-9:58 AM

The Scientific Method

Observation: what you notice

Inferences: possible explanations

Aug 14-9:58 AM

The Scientific Method

Observation: what you notice

Inferences: possible explanations

Hypothesis:

Aug 14-9:58 AM

The Scientific Method

Observation: what you notice

Inferences: possible explanations

Hypothesis: a testable statement or question about the inference

Aug 14-9:58 AM

The Scientific Method

Observation: what you notice

Inferences: possible explanations

Hypothesis: a testable statement or question about the inference

Test:

Aug 14-9:58 AM

The Scientific Method

Observation: what you notice

Inferences: possible explanations

Hypothesis: a testable statement or question about the inference

Test: how you'll gather data to test your hypothesis

Aug 14-9:58 AM

The Scientific Method

Observation: what you notice

Inferences: possible explanations

Hypothesis: a testable statement or question about the inference

Test: how you'll gather data to test your hypothesis

Collect and analyse data:

Aug 14-9:58 AM

The Scientific Method

Observation: what you notice

Inferences: possible explanations

Hypothesis: a testable statement or question about the inference

Test: how you'll gather data to test your hypothesis

Collect and analyse data: data tables, graphs, etc.

Aug 14-9:58 AM

The Scientific Method

Observation: what you notice

Inferences: possible explanations

Hypothesis: a testable statement or question about the inference

Test: how you'll gather data to test your hypothesis

Collect and analyse data: data tables, graphs, etc.

Conclusion:

Aug 14-9:58 AM

The Scientific Method

Observation: what you notice

Inferences: possible explanations

Hypothesis: a testable statement or question about the inference

Test: how you'll gather data to test your hypothesis

Collect and analyse data: data tables, graphs, etc.

Conclusion: is the hypothesis right or wrong.

Aug 14-9:58 AM

The Scientific Method

Observation:

Inferences:

Hypothesis:

Test:

Collect and analyse data:

Conclusion:

Aug 14-9:58 AM

Practice: light

Observation:

Inferences:

Hypothesis:

Test Design:

Type of data to be collected:

Aug 15-11:16 AM

Practice: Locker

Observation:

Inferences:

Hypothesis:

Test Design:

Type of data to be collected:

Aug 15-11:16 AM

There is no one "right" way to put a hypothesis together. We'll try a few. Here's one:

If <insert the inference> ***then*** when <insert the test>, <insert prediction>.

Aug 15-2:14 PM

Variable: anything that can affect the outcome of an experiment.

- Independent variable (also called the **Experimental** variable): the variable that is manipulated.
- Dependent variable (also called the **Responding variable**): the variable that is measured to determine an effect.
- Controlled variables: those that are held constant.

Aug 15-11:27 AM

Another way to create hypotheses:

If <describe how the independent variable will be manipulated>, **then** <describe how the dependent variable is expected to react>.

Aug 18-1:32 PM

Independent Variable (IV):

Dependent Variable (DV):

Control Variables (CV):

Hypothesis:

Aug 18-2:36 PM

Controlled Experiment

A very useful and convincing type of test

Test subjects are divided into two groups.

- for one set, the Experimental Group, a variable is changed,
- for the other set, the Control Group, the variable is not changed.

The effect of the variable can then be concluded.

Aug 21-10:27 AM

The Scientific Method

Observation: X kills gotcha in test tubes

Inferences: X will kill gotcha in humans

Hypothesis: If X kills gotcha in humans, they will recover quicker

Test: Give 25 people (Group A) a pill with X, 25 people a placebo

Collect and analyse data:

	1-2 days	7-9 days
A)	20	5
B)	1	24

Conclusion: Hypothesis was correct. X appeared to kill gotcha in humans since they recovered quicker.

Aug 14-9:58 AM

Some Scientific Terminology

(that often are different from how they are used in everyday conversation)

Hypothesis: a testable statement that might explain an observation. (Not simply a guess.)

Theory: a generally accepted scientific principal that ties together several hypotheses that have been tested and confirmed. (Not someone's guess or hypothesis.)

Scientific Law: something observed without exception.

Aug 14-10:53 AM

Aug 18-11:22 AM