HANDS-ON LAB SKILLS/SCIENCE INQUIRY

Science Process Skills

Scientists use many science process skills when they are working and experiencing science. Most of these skills you will use, too, when you are conducting science experiments and when you are investigating things in our world.

Observing

Science is all about observations. You can use your **senses** to observe, study, and examine the environment around you. Your senses include seeing, smelling, hearing, tasting, and touching.

Classifying

In Science, you often need to group objects in certain groups. **Classify** means to group things together that have similar properties or features.

Estimating

When you est to think of a number that example, a scientist migh above the ground. Then nd, the scientist com ok.

Predicting/Hypothesis

Scientists often make **predictions**, which means that they tell what they think will happen before it happens. A **prediction** is often known as a **hypothesis** in science. You should first state your hypothesis and then test your hypothesis by conducting an experiment.

Making Inferences

You often make inferences in Language Arts, but you can make **inferences** in Science too. An **inference** is when you say what you *think* is going to happen, based on the facts and information that you already know.

Models

Scientists often create models or diagrams of different things they are studying.

Investigating

Scientists examine many different things in order to gather information and learn new things about what they are studying. **Investigate** means to study something closely.

Collecting Data

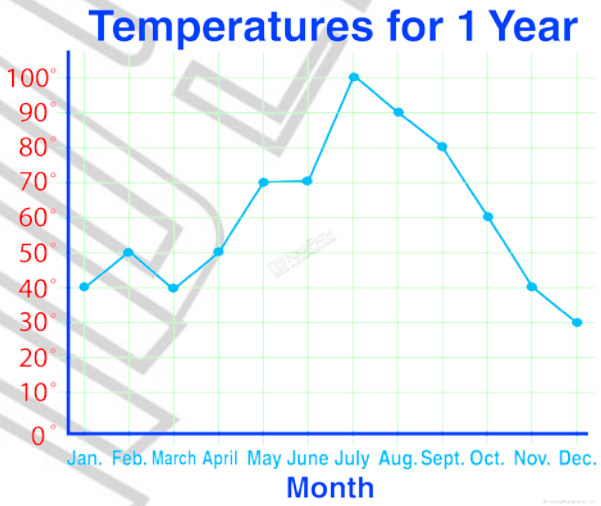
Data is another word for facts and information. Scientists collect facts and information in order to answer the questions they have during investigations.

Color	# of birds
blue	𝍸 𝍸 ||||
	|||

Scientists ofte … conducting experiments i … sy to read.

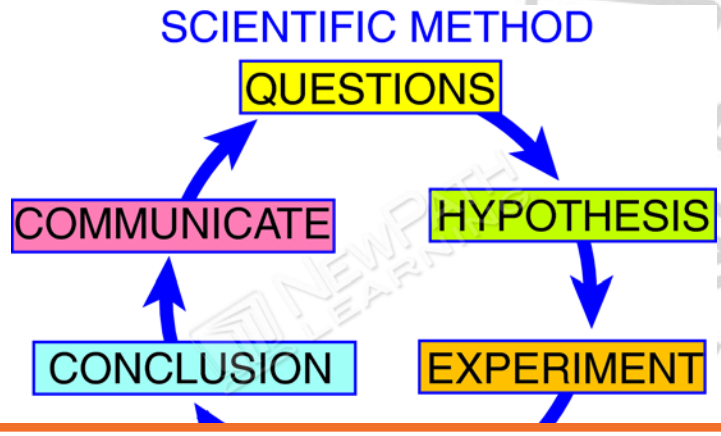
Interpretin…

Scientists often **interpret** the information they collect and observe. **Interpret** means to explain the meaning of something.



Scientific Method

The Scientific method is a set of steps used by scientists as a way to ask and answer scientific questions during observations and experiments. Scientists often use these scientific method steps to study cause and effect relationships, which means they study things that may cause something or be affected by something else.



First step:

Usually quest … conduct experiments, … about science.

Second Step: Write an Hypothesis

A **hypothesis** is your prediction of what the answer will be to your question or what you think will happen during your experiment.

Third Step: Create a control variable.

A **control variable** is the part of an experiment that you do not make any changes to, which you can use to compare the other parts of your experiment.

Fourth Step: Conduct an Experiment

Test your hypothesis by conducting an experiment.

Fifth Step: Gather and Record Your Data

Collect and record the facts and information you find out during and at the end of your experiment.

Sixth Step: Decide Your Final Answer

After conducting your experiment and collecting your data, you need to **interpret** your data and results. You can organize your information by making charts or graphs so that the information is easy to read and understand.

Last Step: State Your Final Answer

After interpreting your results, the final step to the **scientific method** is to state your conclusion and to communicate your results. You need to ask: Was your hypothesis correct? Did the results of your experiment support your hypothesis?

An important step to using the **scientific method** is to ALWAYS show evidence of your conclusions and statements you make after an experiment.

Science Tools

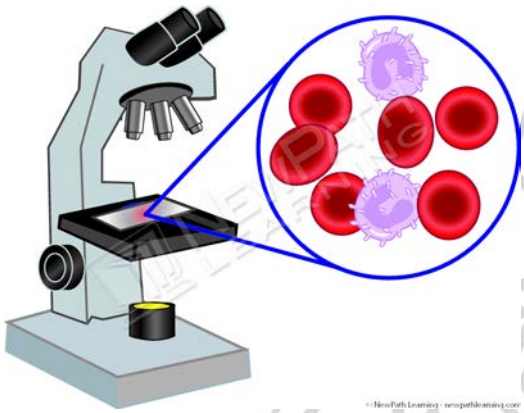
Scientists use d around us.

Tools Use

- G ng an e

Tools Used to See:

- Telescopes – used to see things very, VERY far away, like stars
- Hand lens/magnifying lens – used to enlarge an object or item
- Binoculars – used to make objects far away seem larger
- Microscopes – used to make tiny things appear much larger than they are



Tools Used to Measure:

- Thermometer – used to measure temperature
- Balance – used to measure mass
- Rulers/meter sticks – used to measure length
- Graduated cylinder – used to measure volume
- Stopwatch – used to measure time
- Spring scale – used to measure force of gravity on an object

Tools Used for Recording:

- Tape recorder – used to record sounds
- Camera – used to take pictures

A Tool Used for a Heat Source:

- Hot plate – used to create heat

Tools Used for Calculating and Recording:

- Calculator - - used for figuring out different number amounts
- Computer – used for recording, collecting, and organizing information

Safety in Science

Here are some important safety rules to follow while experiencing Science:

- ☑ You should always listen to and read ALL directions very carefully before conducting any experiment.
- ☑ ALWAYS wear your goggles while conducting an experiment.
- ☑ NEVER taste any materials or substances involved with any experiments.
- ☑ Handle all equipment used for experiments carefully.
- ☑ Clean up all spills quickly.
- ☑ Wash your hands very well after conducting an experiment.
- ☑ If anyth…re conduct…ult right away.