

## Week #1

### Thinking like a scientist

Education goals:

- Define and learn about hypothesis
- Observe and record physical characteristics or organisms
- Identify factors in the environment which effect growth and behavior
- Learn how living things depend on each other through food chains

Learn how to observe and hypothesize about organisms and their environment using examples in real life.

TEKs: 1.3a, 1.3b, 1.2b, 1.2c, 1.2d, 1.9a, 1.9c, 1.10a, 2.9c, 2.9b, 2.3b, 2.4b

As a scientist it is very important to be a good observer and notice what is going on in the natural world around you. These observations help us ask and answer important questions. It's important to ask questions about various organisms, objects or events we observe in the natural world because its how we learn and grow as scientist! There are so many things in the world to explore and discover which means there are so many things to learn about.

We can observe by using our senses like touch, hearing, sight, smell, and taste. We use our sense everyday and they are our best tools to observe. Our senses allow us to know the environment around us.

A hypothesis is an educated guess which is the starting point of an investigation, based on little information. When making a hypothesis we need to take all the observations we made and use it to help us for our hypothesis. It is okay to prove your hypothesis wrong so don't worry if your hypothesis isn't right. A hypothesis is your educated opinion of what the outcome could be.

We can become better at observing by using tools to measure and take note of changes in the environment. To help us collect data we can use these simple tools to helps us get measure and get facts. It important to write down everything you notice and measure because that all can affect the data. (scientific tool examples)

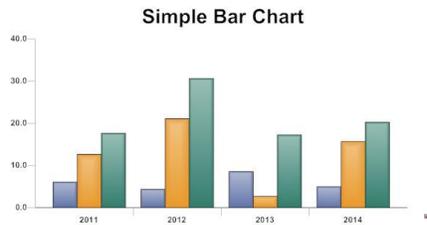
- Ruler: to make measurements of objects
- Magnify glass: to get a closer look in better detail
- Pen/pencil and paper: write down any observations or data
- Thermometer: Determine temperature of environment (air or water)
- Rain gauge: observe how much rain an environment has had in a given time

Show use of tools and observation skills using animal tracks. Look for real life examples.

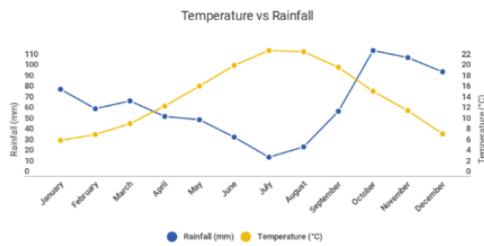
After observations and making a hypothesis as a scientist we need to be able to record data. Recording data is an important job as a scientist because it is what we base our facts from. When recording data,

we use many methods to display our numbers. Graphs are great and simple ways to show data. The most common graphs are bar graphs, line graphs, and pie charts.

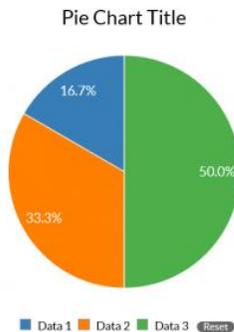
Bar graph example:



Line graph example:



Pie graph example:



Analyze

After you have your data and recorded on a graph its important to analyze and draw conclusions from your data. Depending on the question you asked at the beginning of the experiment your answer to your question should be in your data. When desig ing an exiriment its important to look at the question you're answering and how that data will help you. As scientist we have to look at all of the ways we can answer our question and what are the other possibilities. Throughout the exeriment its important to tak note on everythin you do so people in the future can replicate what you did and observe you data.