**Key Vocabulary ES 2 – The Nature of Science & Scientific Reasoning**

Observation – Using one or all of your senses to get information about the world around you.

Inference – Making a guess as to what your observation might mean. You should not make a conclusion based on an inference. You need to test it to see if you are right.

Scientific Technology – Anything made by people to improve our observations (Example: the telescope)

Predict – To state what you think is going to happen

Hypothesis – The prediction, idea, or “educated guess” that can be tested by an experiment or investigation. A valid hypothesis is one you can test.

Scientific Theory – An explanation for an observation. An idea - based on facts - used to explain things we see around us.

Most people confuse theory with hypothesis. Theories are well-tested explanations, not guesses. Theories change only when better observations provide better information.

Scientific Law – A generalization about patterns in nature. A fact about the world or universe that could be repeatedly observed. It does not try to explain why.

Example: Law of Superposition – it is a repeated fact that newer rock layers are on top of older rock layers.

Theory of Plate Tectonics – an idea based on a set of facts that explains how mountains, volcanoes, & earthquakes occur.

Refute / Reject – To collect evidence that something is NOT true. You must reject a hypothesis if the evidence shows it was wrong. You may refute someone’s conclusion if you have evidence that they are wrong.

Support – You should be able to support your conclusion with evidence. In other words, you must collect evidence showing your conclusion is true.

Verify – You must verify your data. In other words, you or another scientist must check that your data is correct.

Trial – Doing an experiment once. Good scientists do many trials.