

The Three Whales...

- Hypothesis:

possible explanation of an experience or observation.

- Theory:

the *best possible* scientific explanation of an experience or observation in nature.

- Scientific Law:

always true, can not be circumvented or broken.



...in the Ocean of Evidence!

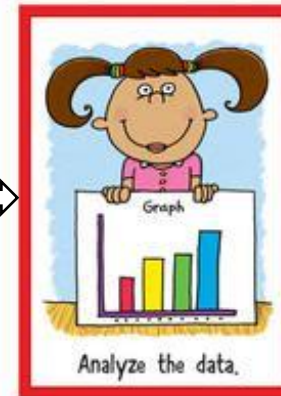
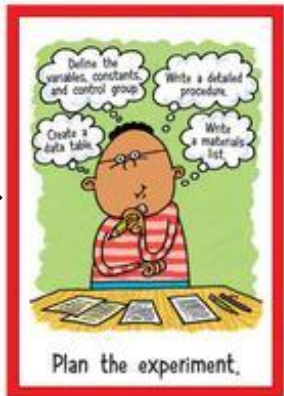
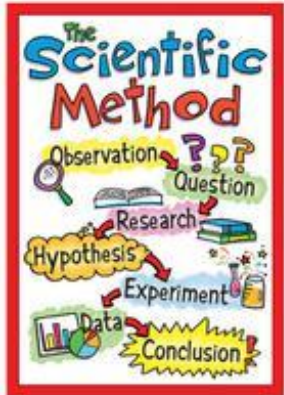
INITIAL OBSERVATION



WONDER

RESEARCH

HYPOTHESIZE

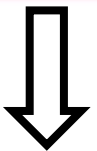


PLAN

EXPERIMENT
ADDITIONAL
OBSERVATIONS

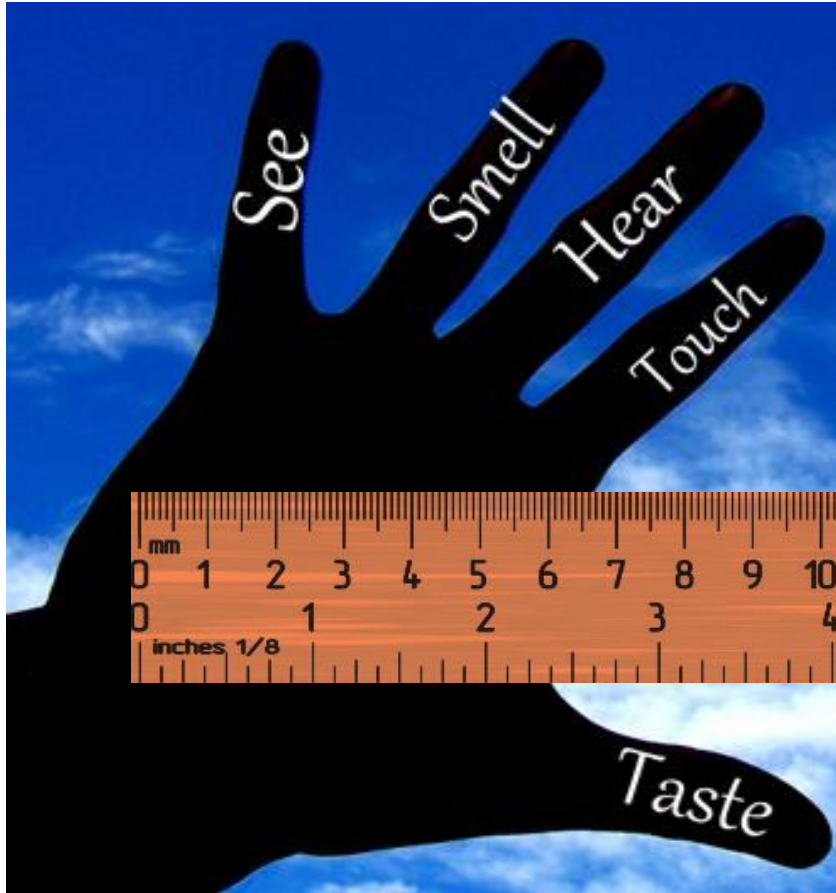
DATA

ANALYSIS



CONCLUSION!

Evidence is based on Observation



- Observation is describing an object or event using your five senses (*what you see, hear, smell, taste, touch*) or measurement (*numbers*).
- Modern science employs **sensors** and **detectors** to make observations.
- Information gathered during an observation is called **data** (singular form *datum*).

TONGUE

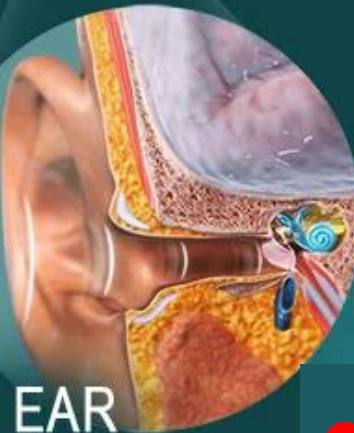


EYE



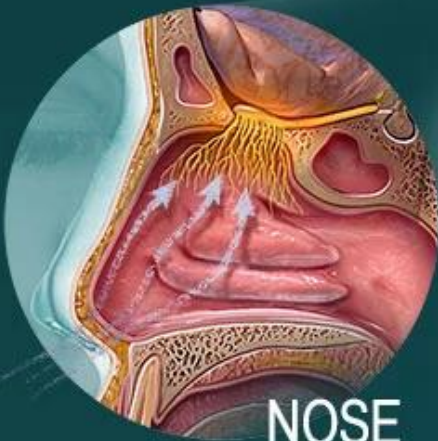
THE SENSES

collecting evidence

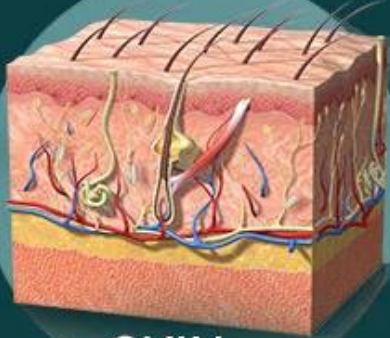


EAR

NOSE



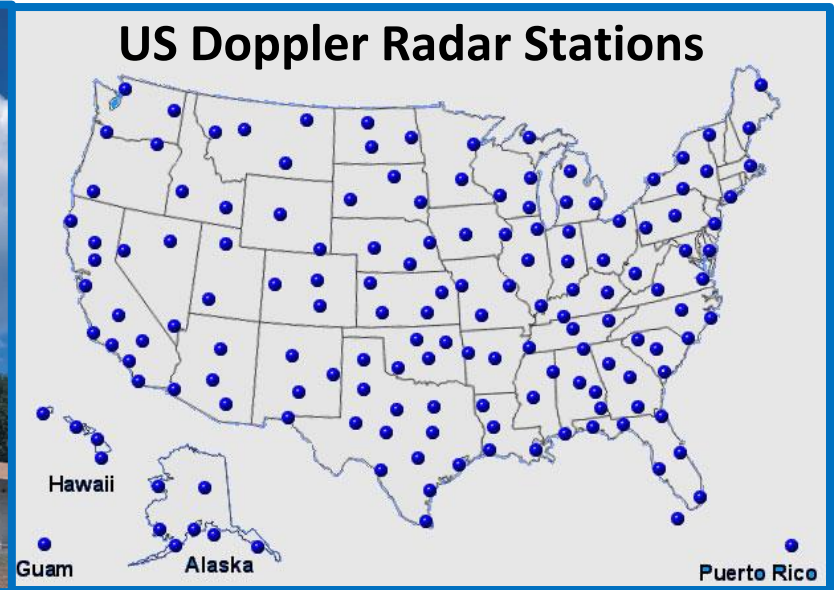
SKIN



Instruments collecting evidence

Weather Radar

helps
spot evidence
of rotation
(*possible
tornadoes!*)
in storms



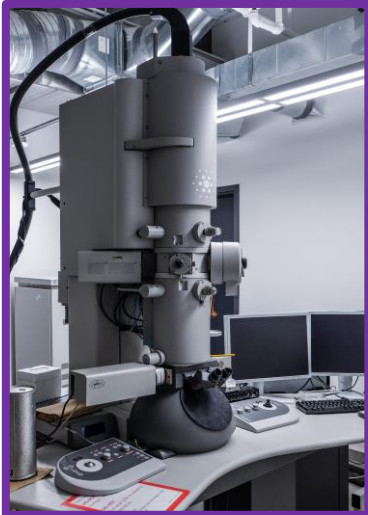
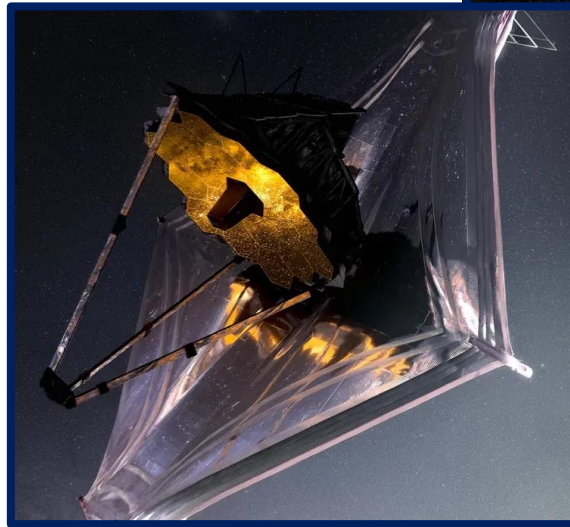
Seismometer, Seismograph

helps detect,
measure, and
locate
earthquakes

Instruments collecting evidence

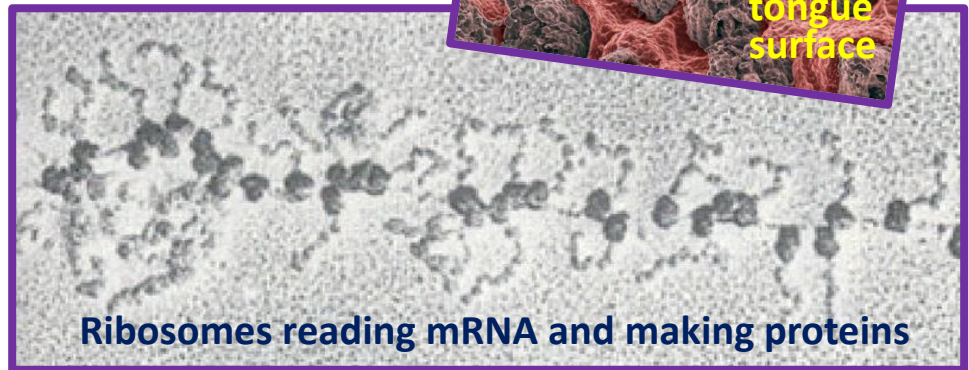
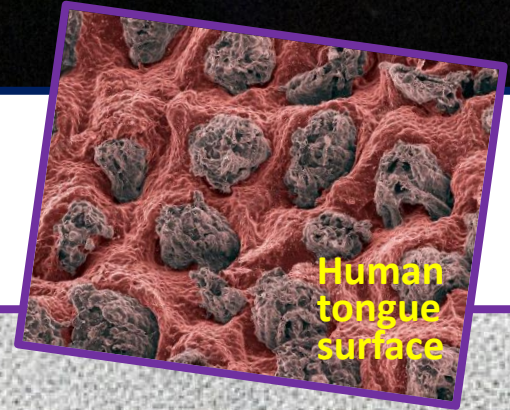
James Webb Telescope

helps
observe VERY
FAR AWAY
objects



Electron Microscope

helps
observe
VERY SMALL
objects



Observation depends on observer

- Location and size of an observer
- Observer limitations



can only see
visible light



can see
ultraviolet light



DIY: **Monarch Butterfly**



common form

**rare Hawaiian
white form**



DIY: Clouds

