

*WARM UP:*

*(write in your spiral)*

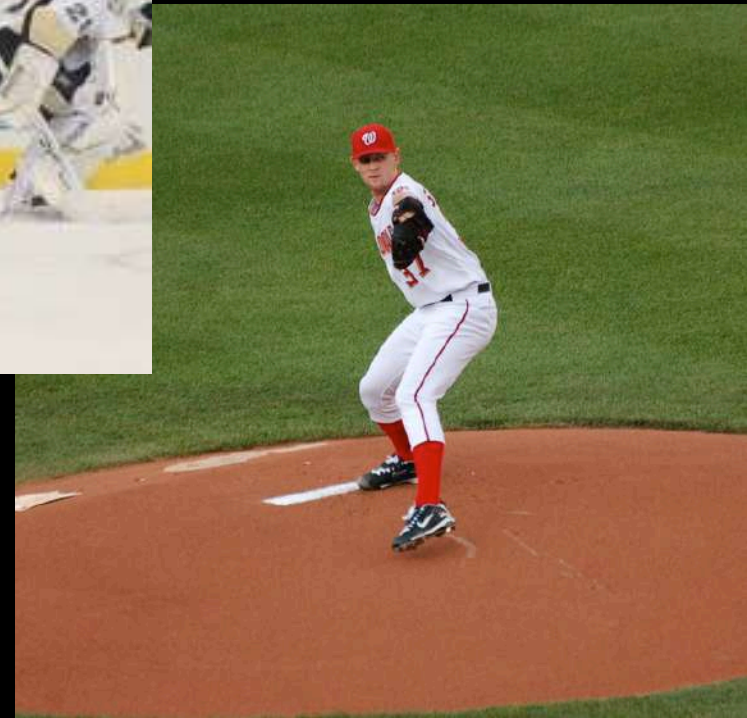
Why does every teacher show  
Bill Nye videos for certain topics?


<https://www.youtube.com/watch?v=JkYgnbFo8uM>



# The Nature of Science

# WHAT DO WE MEAN BY THE “NATURE” OF SCIENCE?





Equipped with our five senses,  
humans explore the universe  
around us and we call this  
adventure **Science**.

# The Nature of Science

The natural world is understandable

Science demands evidence

Science is a blend of logic and imagination

Scientific knowledge is durable

Scientific knowledge is subject to change

Scientists attempt to identify and avoid bias

Science is a complex social activity



THE NATURAL WORLD IS  
**UNDERSTANDABLE**

## *The Natural World is Understandable*

The **natural world** is understandable through the careful collection and critical analysis of true evidence.

It can be tested, produced, observed, have reliable results, and be reproduced or created in the world around us.

\*\*It cannot explain “supernatural or magical” due to the inability to be tested or proven.



SCIENCE DEMANDS

**EVIDENCE**



## ***Science Demands Evidence***

Scientific knowledge uses all of our human senses.

Scientists use data to make inferences and formulate explanations of phenomena.

Data can be obtained through experimentation or observation.



SCIENCE IS A **BLEND** OF

**LOGIC AND IMAGINATION**

## *Science is a Blend of Logic and Imagination*

Scientific knowledge involves human imagination, creativity, and inference.

Creativity and logical steps of scientists to visualize, analyze, and explain different situations or predict outcomes.



SCIENTIFIC KNOWLEDGE IS

**DURABLE**

## *Scientific Knowledge is Durable*

Scientific ideas are continually tested.

Ideas that are able to withstand the scientific community form the foundations of our current understandings of the natural world and how it functions.

**Durable**- capable of lasting, reliable, firm

## Theories vs. laws

Theories and laws are two different types of knowledge levels.

**Theories** are generally used to explain complex natural processes not easily measured.

**Laws** often use mathematical formulas to show relationships and make predictions about the natural world.

# SCIENTIFIC LAW VS. THEORY

1. **Scientific Theory**- a repeatedly test and proven idea but can be changed with new info.
2. **Scientific Law**- a constant, not changing repeatedly proven specific information



SCIENTIFIC KNOWLEDGE IS  
**SUBJECT TO CHANGE**



# *Scientific Ideas are Subject to Change*

*We continually ask –why? How? Why not? What if?*

*So scientific study can change with technology improvements, testing environment improvements, and other ways that open up that idea to new testing.*



SCIENTISTS ATTEMPT TO AVOID

**BIAS**

## *Scientists Try to Identify and Avoid Bias*

A few scientist might fall into subjective, political, religious, ethical or esthetic judgment that can affect their outcomes or wanted outcomes of testing.

Most scientist work objectively so that all science ideas are free from manipulation of data.



SCIENCE IS A COMPLEX

**SOCIAL ACTIVITY**

# *Science is a SOCIAL*

Scientific research is dependent upon financial support, and this can influence - both positively and negatively - which areas are investigated.

It is done by people **working together** collaboratively. Its procedures, results and analyses must be shared with the scientific community, and the public, through conferences and peer-reviewed publications.

Often times research must be funded (need money) to keep the research facility, the scientist, the equipment, and other items moving forward in that study. Some funds come from businesses, government, or charities.

1982



Let's get back to work!

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