

IN:

- What is science?
- What is engineering?

NATURE OF SCIENCE & ENGINEERING



The **Scientific Method** = organized approach to problem-solving
(Old View)

- Observation
- State the Problem
- Gather Information
- Form a Hypothesis
- Experiment
- Analyze and Form Conclusions
- Report



Read Me



There is no one scientific method.

The fields of science and engineering use different approaches to solving problems. So there is no universal sequence of steps. "The Scientific Method" is a limited idea. It oversimplifies what scientists and engineers actually do.

Read Me

What is science?

Study of

- The universe
- How things work
- Everything
- Phenomenon
- Planets
- Ecosystems
- Cells
- DNA

Read Me

Lets take a closer look at science today!



What is Engineering?

- Solving human needs
- Defining human problems
- Design possible solutions to problem

I. Science begins with asking questions.

- **Curiosity** (Why is the sky blue?)
- **Models and Theories** (How does plate tectonics impact volcanoes?)
- **Better solutions** (How do we better predict storms based on what we know about air pressure in the atmosphere?)

II. Engineering begins with defining a problem.

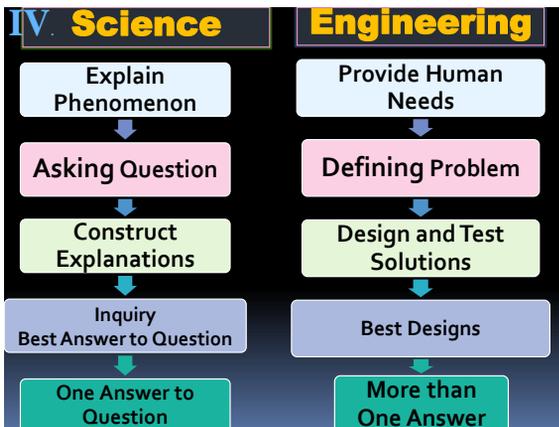
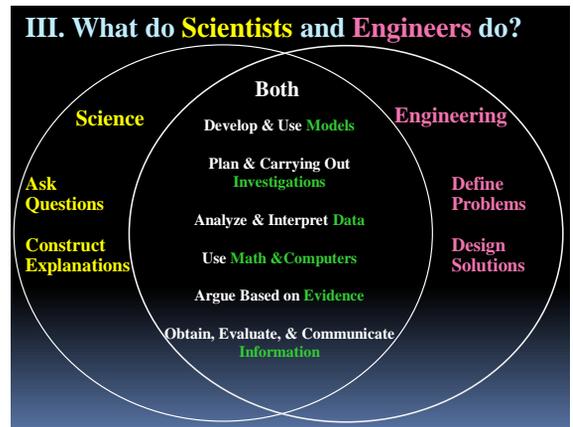
How do we land a rover on Mars?
More than one correct solution

What are my **CONSTRAINTS**?
(= Materials & Resources)

What do I have to use to solve the problem?
What are my **NEEDS** to solve the problem?

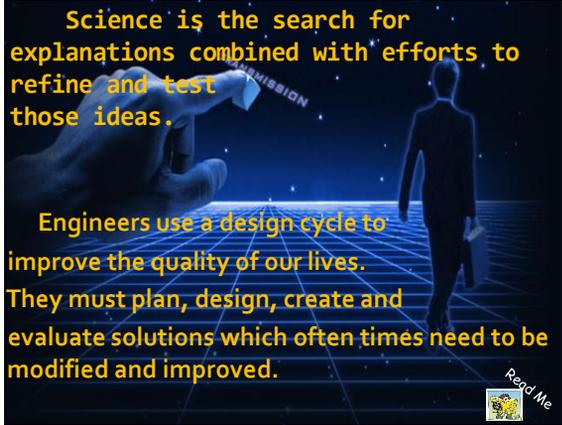
What are my **CRITERIA**?
(= Design features)

What do I want to do to solve the problem?
What are we trying to accomplish?



Nature of Science and Engineering Today

- **Active process**
- **Constantly changing**
- Requires **creativity, imagination, honesty and integrity**
- **Social process** based on the research of others
- **No truth or one best design** ...one idea or solution may prove better than another

A hand from the left side of the frame points towards a glowing, perspective grid floor that recedes into the distance. A silhouette of a person is walking away from the viewer on this grid. The background is dark with some stars or distant lights. The word 'MISSION' is written in a curved path above the person's head.

Science is the search for explanations combined with efforts to refine and test those ideas.

Engineers use a design cycle to improve the quality of our lives. They must plan, design, create and evaluate solutions which often times need to be modified and improved.

