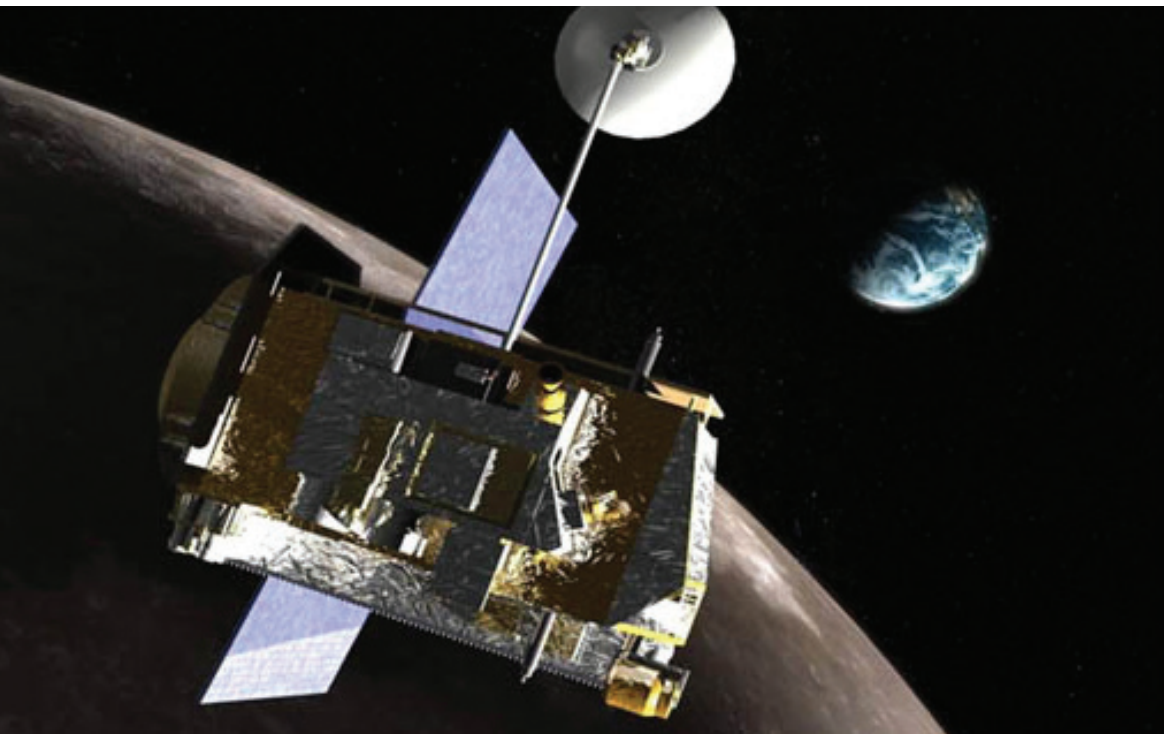
Build a Satellite to Orbit the Moon



DESIGN challenge

To design and build a satellite that will orbit the moon. It must carry a combination of cameras, gravity probes, and heat sensors to investigate the Moon's surface. The satellite will need to pass a 1-meter Drop Test without any parts falling off of it.

OBJECTIVE

To demonstrate an understanding of the Engineering Design Process while utilizing each stage to successfully complete a team challenge.

PROCESS SKILLS

Measuring, designing, evaluating

MATERIALS

General building supplies

Bag of various sized buttons

STUDENT PAGES

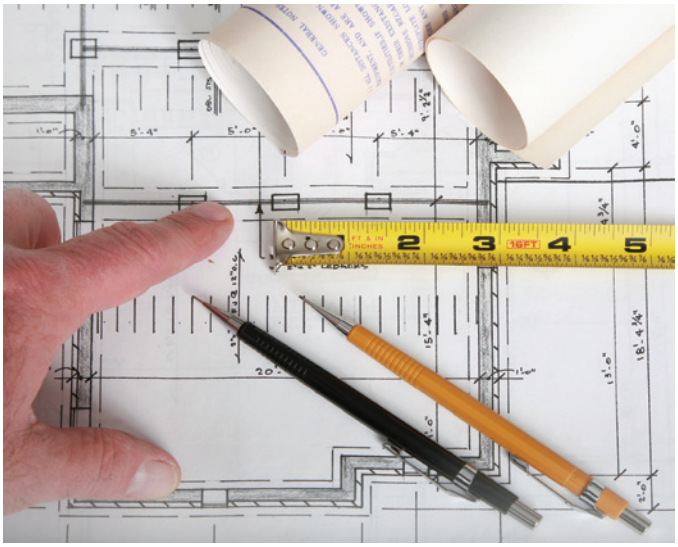
Design Challenge

Ask, Imagine and Plan

Experiment and Record

satellite

MOTIVATE



- Spend a few minutes asking students if they know what engineers do, then show the NASA's BEST Students video titled, "Engineering":

  http://svs.gsfc.nasa.gov/goto?10515

- Using the *Engineering Design Process (EDP)* graphic on the previous page, discuss the EDP with your students
  - **Ask** a question first about the goal.
  - **Imagine** a possible solution.
  - **Plan out** a design and draw your ideas.
  - **Create** and construct a working model.
  - **Experiment** and test that model.
  - **Improve** and try to revise that model.

SET THE STAGE:

ASKIMAGINE
&PLAN

- Share the *Design Challenge* orally with the students (see next page).
- As a group, have students ask questions about the Challenge and brainstorm ideas. Then have students break into teams to create a drawing of a satellite. All drawings should be approved before building begins.

CREATE

- Distribute materials for students to build their satellites based on their designs and specifications.

EXPERIMENT

- Teams should make observations of the satellite drop and record them in the data tables of their worksheet or report orally to a group leader.

DESIGN challenge

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IMPROVE

- Have students inspect their satellite and rework their design if needed.

CHALLENGE CLOSURE

Engage the students in a discussion with the following questions:

- *List two things you learned about what engineers do through building your satellite today.*
- *What was the greatest difficulty you encountered while trying to complete this challenge? How did you solve this problem?*

PREVIEWING NEXT SESSION

Ask teams to bring back their satellite model for use at the next session. You may want to store them in the classroom or have one of the club facilitators be responsible for their safe return.

satellite

Build a Satellite
Teacher page