



## **Goddard Rockets**

Adapted from the NASA Rockets Educator Guide

<http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Rockets.html>

### **Objectives**

Students will:

- Build and launch a rocket based on Robert Goddard's rocket.

### **Suggested Grade Level**

3<sup>rd</sup> -12<sup>th</sup>

### **Subject Areas**

Science

### **Timeline**

60 Minutes

### **Standards**

#### **Science**

#### **NS.5-12.5 Science and Technology**

- Abilities of technological design
- Understanding about science and technology

### **Background**

Building a Goddard rocket gives students an understanding of how Robert Goddard, the father of modern rocketry, designed his first rockets. The rockets built in this lesson, have their power source at the top of the rocket. Goddard's first rockets were powered in this fashion. He soon realized that this was not the most efficient way to power a rocket and changed the design to the more familiar design we see today with the power source at the bottom of the rocket.

### **Vocabulary**

Robert Goddard, launch angle

### **Materials**

- ¼" or ½" pipe foam insulation
- 8" Cable ties (3 per student)
- Large rubber bands-size 64 (1 per student)
- Hot glue

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- Styrofoam meat trays or paper plates
- Meter sticks
- 75 cm of string
- Small washers
- Scissors
- Press tack
- Masking tape
- Measuring tape to measure distance of rockets

### **Lesson**

1. Follow the lesson in the NASA Rockets Educator Guide starting on page 72.

### **Extensions**

On page 75 of the NASA Rockets Educator Guide, it explains how to make a launcher for the Goddard rocket out of a meter stick. Students then will be able to compare launch angles and test the efficiency of their rockets.

### **Resources**

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