



Rocket Power



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#Design&Technology #Science #Intermediate #3-4

Description for Students

In this lesson you will design a rocket using Shaper.

You will think about the features a rocket needs to have.

You will need to decide which 3D shapes to include in your rocket and how to put them together.

Teachers' Notes

1. In Step 1, refer to the diagram below or show students the suggested video.
<https://youtu.be/jl-HeXhsUlg> (video 9)

2. Correct answers for Step 1

Structure: Provides the frame of the rocket

Payload: Stores the cargo that the rocket needs to carry

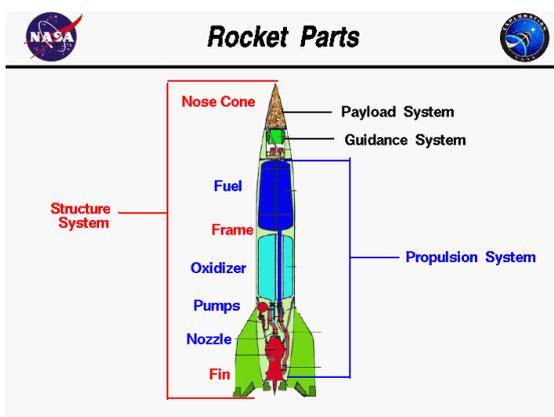
Propulsion: Launches the rocket

Guidance: Keeps the rocket traveling in the right direction

This lesson addresses the following outcomes from Makers Empire's International Design Curriculum:

- Explains how forces and the property of materials affect the way a product behaves or performs
- Investigates the suitability of materials, systems, components, tools and equipment for a range of purposes
- Uses 3D modeling tools to create structurally sound designs, prototypes and models

Reference Material



Rocket Power - Rocket Diagram.gif (credit www.grc.nasa.gov)

Download: <https://tinyurl.com/y5e2zpg9>

Assessment Rubric

★★★★★★	★☆☆☆☆	★★☆☆☆	★☆☆☆☆	☆☆☆☆★
Describes in detail the key components of a rocket and how it works including their own research.	Lists the key components of a rocket and gives a detailed description of how a rocket works.	Lists the four main parts of a rocket and describes the function of each part.	Describes what a rocket looks like.	Does not describe a rocket.
Selects appropriate shapes for each part of the rocket and suggest ways to make new shapes by combining existing shapes.	Selects appropriate shapes for each part of the rocket and justifies choices.	Selects appropriate shapes for each part of the rocket.	Selects 3D shapes to create a rocket.	Does not select shapes to create a rocket.
Designs a detailed rocket that includes all identified components and includes geometric features created by combining shapes. Explains the design decisions made.	Designs a detailed rocket that includes all identified components and explains the selection of shapes used for each part.	Designs a rocket that clearly shows all 4 parts.	Designs a rocket using 3D shapes.	Does not design a rocket.

Step 1. (5 mins)

Watch the video <https://youtu.be/jl-HeXhsUlg> with your class, or show them the Rocket Parts diagram (attached).

Ask students to identify the four main parts of the rocket, and explain what they do.

Step 2. (10 mins)

Have your students to draw their 3D rocket designs, showing the 3D shapes they plan to use. Students should label the main parts of their rocket.

Step 3. Design Time! (30 mins)

1. Log in to Makers Empire 3D and open Shaper

2. Choose a shape to begin making the structure of your rocket

Reminds students that their rocket doesn't have to look the same as any existing rockets, they can be creative!

3. Combine any shapes you want to create the other sections of your rocket

Students should include: Structure, Payload, Guidance System and Propulsion System

4. Encourage students to add details to make their rocket look unique

5. When they are finished, students click "Finish" and give their rocket design a title



Rocket Parts

