Physics – Rocket

Created by Mike Page & Nate Lott   *Requires accounts with CoSpaces Edu Pro and Tinkercad

Difficulty 3 | ⏱ 4–45 minutes | 👥 small group

Tags: Physics, Spacing, Coding, CoSpaces, Tinkercad

App/Tech Tools — CoSpaces Edu Pro accounts, Tinkercad account, MERGE Cube, MERGE Headset (optional), device (phone/tablet)

Materials

Learning Objectives

- Students will learn about 3D design in Tinkercad and computational thinking in CoSpaces.

- Students will use a coding function called lists.

- Students will explore a rocket's necessary shape and components.

Activity

1. Have students open their Tinkercad account in another tab.

2. Have them come back here (Mars Rocket) – Click duplicate and tinker.

3. ▶ **Video 1** — Learn how to use work planes in tinkercad. This video works on one skill, however students should pay close attention if they want to learn a more effective way to work with a work plane. Work planes allows students to work on different levels on their custom rocket with ease.

4. [▶ Video 2]   Another small video and skill yet crucial part to tinkercad. If students have mastered the work plane in video one, video 2 scaffolds from that video. Students will learn to align objects and create rings onto their spaceship.

5. [▶ Video 3]   Students will continue to build on previous skills. Congratulate students on finishing the first two videos. Have them go back to the original work plane and learn to duplicate and flip items to work on the bottom half of their rocket.

6. [▶ Video 4]   Students will complete this part of the lesson by adding the legs to the rocket using the skills they have been working on. We suggest pausing the video when a new skill is shown then complete that skill before returning to the video. Students will now go on to CoSpaces.

An example of a custom rocket:
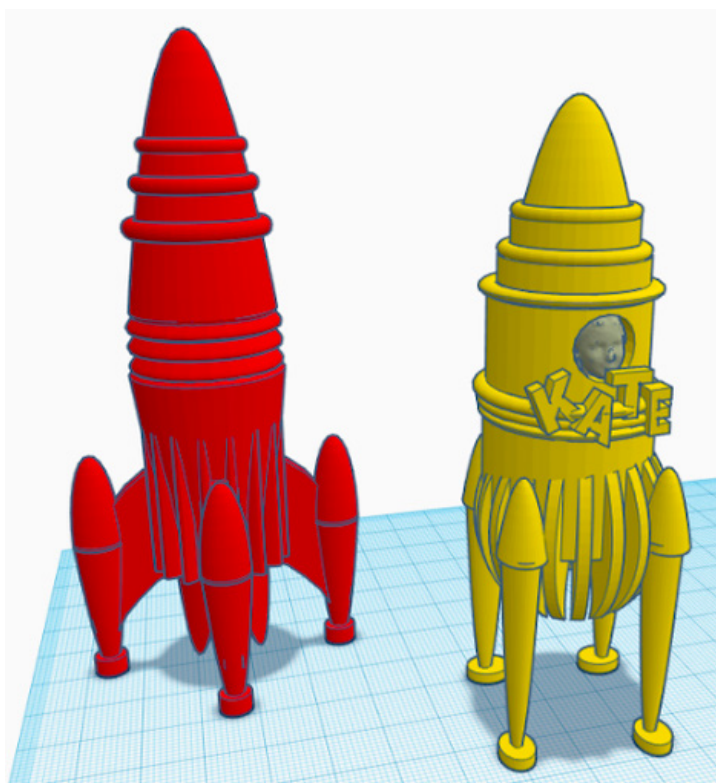
7. [▶ Video 5]   Students will learn how to export their rocket as an STL and drag that file into CoSpaces. Once their file is in CoSpaces, they will learn how to duplicate it and place their custom rockets into the CoSpaces grid. Almost time for take off.

8. [▶ Video 6]   Students will now begin coding using CoBlocks in CoSpaces. Students will learn about the X,Y and Z axis and how to shoot the rockets into the virtual sky.

9. [▶ Video 7]   Students will be using the CoSpaces app and the Merge Cube or surface tracking to view their rocket project in 3D.

MERGE

10. Students can now add other list elements to their scene, such as interactive features.

Example Space on CoSpaces Edu – [Click here](#)   Example on Twitter – [Click here](#)

Extension Idea

- Have students continue creating their model by expanding with the unit – Space to learn the different layers of the [Earth's atmosphere.](#) (NASA'S Space Place:Stratosphere)

Suggested Questions

- What is the best shape for a rocket to have a successful launch and travel in space?

- What components does a rocket need and how will you recreate them?

- Through time, how have rockets changed to be more successful?

- What design flaws have made some rockets unsuccessful in their mission ?

- Design your perfect rocket and explain why you think it will succeed ?

- What are the layers of the earth's atmospheres and how are they similar and different?