

# Birthday Activities

## Recommended Ages 8-12

**Aerospace Engineering - Bottle Rockets** - Students will learn how simple air pressure can jettison a rocket more than one hundred feet in the air. Students will get the chance to build a large model rocket that is capable of launching using pressurized water and air.



**Aerospace Engineering - Lunar Lander** – Students will learn about the importance of weight distribution in aircraft design. Students will build their own custom “Lunar Lander” to protect their space cadet marshmallows from being ejected from their space craft.

**Electrical Engineering – Flash Light Builders** – Students will get to test their knowledge on circuit building. The students will be building flashlights out of a disposable water bottle. By the end of this lesson students will have a great understanding of how an electrical circuit works.

**Robotics Engineering – Jousting Robots** - Students will revive this dangerous, medieval sport during the jousting battle challenge. They will program their robots to follow a line and attempt to knock each other over using a lance attachment.

**Robotics Engineering – Sumo Robots** - Students will design and build a robot capable of pushing the other team’s robot out of the ring in this battle of strength.

**Robotics Engineering – Robot Tug of War** – Students will design and build a robot capable of battling other robots for tug of war supremacy.

**Mechanical Engineering – Balloon Cars** – We are off to the races with this competitive challenge. Students will design and build a balloon powered car that will provide them with the winning edge to beat their peers in a drag race.

**Mechanical Engineering – Candy Catapults** - The catapult activity will bring a basic knowledge of how and why catapults were first created. The students will build a simple catapult using a spoon to power their candy projectile. Students will also explore the mechanics of catapults in order to increase precision and accuracy.

**MinecraftEDU** – Students will enjoy experiencing one of the exciting MinecraftEDU worlds unique to Engineering For Kids.