**Make a 2 liter Bottle Rocket.**

**Duration**

30 minutes

**Preparation**

**List of Equipment**

ListOfEquipment

​Empty 2 litre pop bottle, bottle cork, inflation needle for sports ball, bicycle tire air pump (standing version), cardboard for rocket fins, construction paper for the nose cone, duct tape and water.

**Preparation Instructions**

Page Content

​To start your project, make sure that you have all the components before moving foward.

**Introduction**

IntroductionField

​Looking for something exciting to do? Try building a water powered rocket out of a 2 liter soda bottle! This can be completed in less than half an hour with simple household materials.

**Student Instruction**

StudentInstruction

​1. First of all, take the cork and make sure that it will fit in and seal the end of your soda bottle.
2. Now take the sport ball inflation needle(Schrader Needle) and cut the cork so that it is slightly shorter than the needle.
3.Make a hole thru the length of the cork that you will push the Schrader Needle thru. It is critical that this hole is smaller than the needle so that you get an air tight seal.
4.Now push the needle thru the cork and push into the end of the 2 Liter bottle.
5.Now take the cardboard for the rocket fins and make your own designed fins but make sure that they are about 8 inches long and 2 inches wide at the base.
6.Turn the 2 liter bottle top down and tape the fins onto the bottle spacing them equally apart. You also need to extend them past the bottom so that they work as the stand for the rocket on the lauch pad.
7.Now take the construction paper and make a cone that covers the bottom of the 2 Liter bottle and tape it securely in place.
You are now ready to make history.

**Activity Instruction**

ActivityInstruction

​You will now need to put some water into your bottle to act as ballast and to reduce the amount of pumping that you will have to do. Fill the bottle with about 10% water which should be enough to get you just short of the moon.
Attach the pump to the Schrader needle, set the rocket on it fins pointing up and start pumping. When the pressure reaches a critical point and friction can no longer keep the cork in the bottle, your rocket will blast into the sky.
To get different results, try pushing the cork in tighter, add some water soluable colours/tempra point to the water or aim it at different angles to see what works best. Even try hooking it up to a small electric car tire pump to see what happens.
At what pressure do 2 liter soda bottles start to fail? The answer is 150 pounds per square inch so a small electric car tire pump or a hand pump will not exceed that limit. Not to mention that the weak part of the equation is the cork.

**Reflection**

ReflectionSteps

​1. Was your goal achieved?
2. What would you do different next time?
3. What learning moment do you take away from this activity?
4. Where else can you use this in the Cadet Program?

ReflectionLink

**Satisfaction Survey**

SatisfactionLink

**What's Next?**

NextStepField

​A quick line to conclude the activity, indicate any badges they earned and identify if this activity is a pre-requisite for another one.

**Activity Sheet Links**

ActivitySheetLinks

​Nil