Week 6 (50-55 Minutes)

Week 4 Recap

"Who remembers what we talked about last week?"
"What was the best part of the making wind powered gadgets?"
It's important to ask questions about the previous week to help children retain the information!

15 Minutes

How Rockets Work

Do you think a plane could fly to the moon? Why or why not?

In space, there is no air, so you can't fly a plane to the moon.
Rockets can fly in places where there is no air.

Today we'll learn how rockets work. Does anyone know how they work?

After today, you will be one step closer to being rocket scientists!

(STEP BY STEP LEAD CHILDREN TO DRAW THE ROCKET ENGINES ON THE NEXT PAGE)

Youth Experience Science

By Diego Mariscal, Et. Al

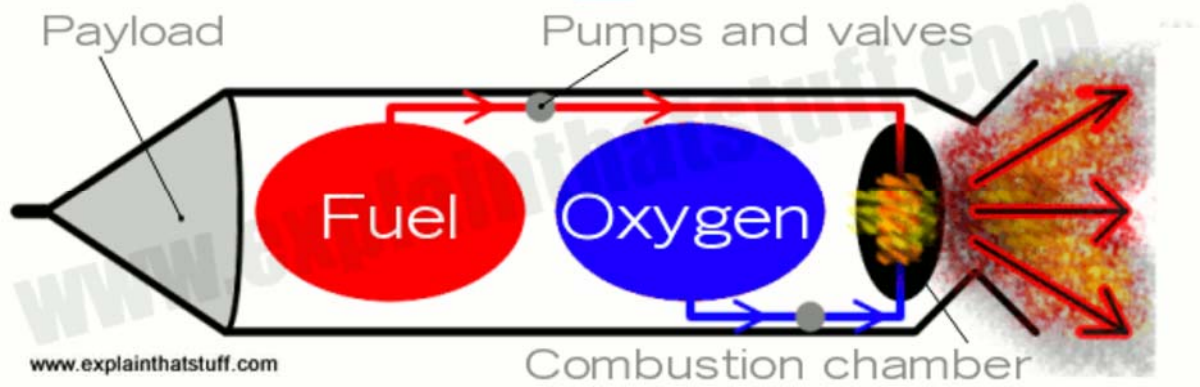
4-H Afterschool

Let's talk about how rockets work. These are the basic rockets that were able to go to the moon back in the 60s. Rockets have improved a lot over the last 50 years, but they still have the same ideas behind them.

Everyone grab a pencil and your paper.

First – Draw a triangle. That is called the PAYLOAD. Payload is what the rockets carry onto space– could be part of a space station, could be a module to land on the moon, or a satellite to help people communicate.
Second – draw two long lines along the base of the payload cone. Split that into two sections. Each section is called a STAGE. A stage is fuel and a big rocket engine. When a stage has used up all of its fuel, it is dumped. Used stages fall back to into the ocean and are reused. Most rockets use two stages to get out into outer space.
The end of your rocket we will draw the basic rocket engine.
In the middle of the second stage draw one circle and label it FUEL TANK. What do you think that does?
Draw another circle next the fuel tank. That is the OXYGEN TANK. What do you think that does?
Explosions and fire need oxygen to burn. There is no oxygen in space.
Next, draw a circle towards the end of the rocket, that is called the COMBUSTION CHAMBER. At the end of the rocket, fuel and chemicals mix with oxygen. You can label the combustion chamber as "CC" – what does "CC" stand for?
Connect the fuel and oxygen tanks to the end of the rocket with lines.

RECAP – so how rockets work?



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Paper Rockets (40 Minutes)

Materials
Cardstock Sheets
Regular Paper
Glue
Scissors
PVC Pipes; PVC Glue; 2 liter plastic bottles
Tape

Today we will build two rockets, one out of cardstock and one out of regular paper. Next week, you will use your handouts to document how they fly and we'll try to figure out the best trajectory for them.

STEP 1
Decorate half of the sheets which you will use to make the rockets

STEP 2
Roll the outside of the sheet on a PVC pipe to get a good fit. Glue the edge
IF THE ROCKET IS TOO TIGHT ON THE PVC IT WILL NOT LAUNCH WELL

STEP 3
Use a small piece of paper and create a PAYLOAD cone for the top of the rocket

STEP 4
Cut 3 triangles and glue them as fins to help the rocket fly

Week 7

50-55 Minutes

"Who remembers what we talked about last week?" "What was that important to know?"
It's important to ask questions about the previous week to help children retain the information!

ROCKET LAUNCH - 40 Minutes

Materials
PVC Rocket Launchers
TAPE
Safety Goggles
Cones to mark a launching area
Rocket Launch Hand Out
A surface to Write in
Stop watch or phone stop watch

Check which way the wind is blowing and set up the launcher angled with the wind
Set up cones around the launcher to ensure children will not be interfering with the
Launch

Line up the children and ensure they are wearing safety goggles
Don't let children try to catch their rockets. They might get hurt!

LAUNCH 1 – Height Test – CARDSTOCK
Have children take turns on using the stop watch to check the length of the flight

LAUNCH 2 – DISTANCE – CARDSTOCK
Launch all the rockets and recover them once everyone has gone

Compare the rockets that flew the highest and the furthest, what set them apart from the rest? DISCUSSION