* Get to know you activity:
  + Some icebreakers
* Straw rockets activity
* Overview of rocketry:
  + History of rockets and space exploration.
* Basic rocket components:
  + Body tubes, fins, nose cone, engine, altimeter
  + Discussion of how each component contributes to flight.
  + Science behind the altimeter
* Start building beginner rockets
  + How to use epoxy
  + Making motor mounts and attaching shock cord
  + Cutting fin slots in tubes

What to bring:

* Model rocket to demo
* Some motors
* Epoxy
* CF rocket

**PowerPoint Slides:**

**What is a rocket?**

* Ask kids the question first
* A balloon could be considered a rocket?

**Flight of a model rocket**

* What is the velocity and acceleration at each point
* Description of ejection charge

**Apollo 11**

* Ask if any of them have seen the actual launch
* Do they know what the launch vehicle is called
* Start at 3:00

**Space Shuttle**

* Start at 0:40
* Launched satellites, served as orbiting laboratory, and also used to work on ISS
* 135 missions in total
* External tank holds fuel for the main engines
* Special boats brought the SRBs back so they could be reused again
* Black tiles are heatshields – temps reached 1650 Celsius/3000 Fahrenheit

**Artemis**

* Get them inspired, then transition to model rocketry – say it’s a starting point

**Fin shapes**

* Rectangular – easiest to build
* Clipped delta – aerodynamic, easy to build
* Swept – moves center of pressure back
* Tapered swept – moves center of pressure even more back
* Elliptical – most aerodynamic design for slowish rockets, but hard to make (if you’re manually cutting them)
* Talk about 3D printing

**Motor mount**

* Can make your own models
* Talk about how to tell a motor from its name
* Different sizes

**Body tubes**

* Different materials and their advantages/disadvantages
* CF hard to cut
* Could also entirely 3D print your rocket

**Payload**

* Altimeters use air pressure to detect altitude – absolute vs relative pressure

**Epoxy**

* Other alternative epoxy, but JB Kwik is most efficient cost and building-wise
* If you’re building supersonic rockets, might want other epoxies
* Around 50/50, but don’t have to be super exact
* Want to score stuff
* Some things like plastic don’t stick to epoxy well

**Super glue**

* Careful when working around it, dries super quickly
* Fumes are kind of noxious
* When to use it

**Sanding**

* Different grits
* Don’t really need a sanding block
* Use it to remove finish from body tubes

**Shock cord**

* Kevlar – flame resistant and very strong
* 3-4 times length of the rocket
* Could use dual cord

**Motor mounts**

* Trust your judgement
* Try rolling it to see if it is straight

**Cutting fin slots**

* Winding a piece of paper around the tube to draw a straight line