YOUNG INVENTORS

Transportation

Mr. Burns, Mr. Ellers, Mr. Ubbink

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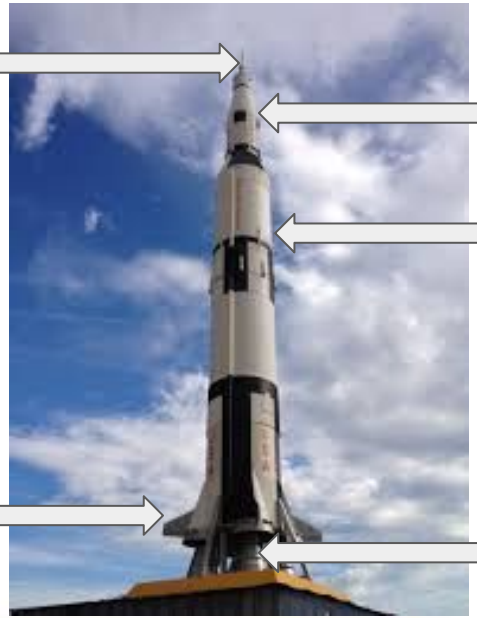
Today we are going to create a form of **Space Transportation**!

- Can anyone **name** a form of **Space Transportation**?

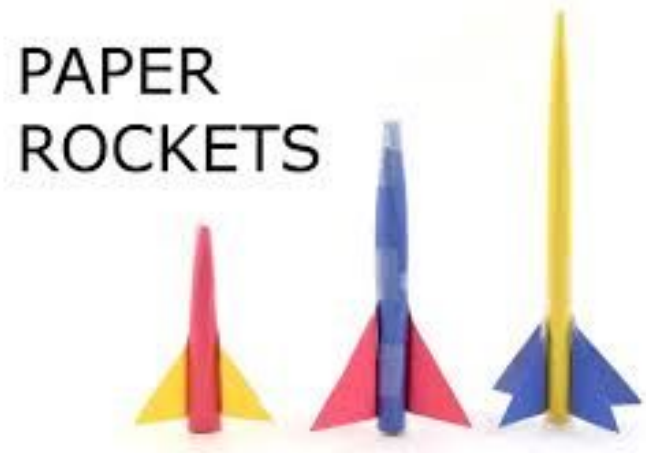
Rocket Diagram

- Can anyone **name** the **components** of a **rocket**?



Today we are going to build a **Paper Rocket**!

- Please take out the items in your **box** with the "**WEEK 4**" **stickers** on them.



Paper Rocket Components

- Soda Bottle

- Construction Paper / Folder

- Ping Pong Balls

- PVC Pipe

- PVC Elbow

Question time!

- What do you think the **construction paper** and **folder** are going to be used for?

Body, fins, and nose cone!

Question time!

- What do you think the **ping pong balls** are going to be used for?

Payload!

Question time!

- What do you think the **PVC pipe** and **elbow** are going to be used for?

Launch Device!

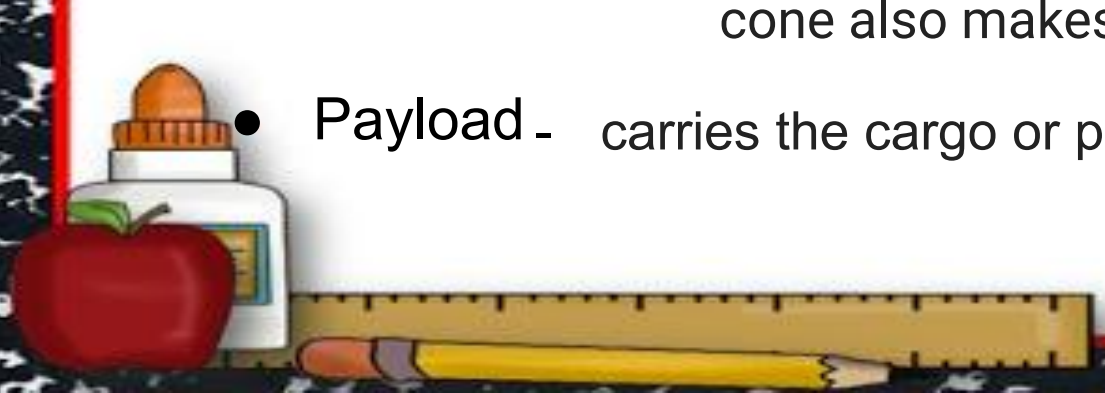
Question time!

- What do you think the **soda bottle** is going to be used for?

Our power source (engine) !

Now that we know the components, what are their purposes?

- Body - holds the fuel for the rocket.
- Fins - are used on rockets to provide stability and direction control.
- Nose Cone - is the most forward section of a rocket. The cone also makes the rocket aerodynamic.
- Payload - carries the cargo or passengers on the rocket.

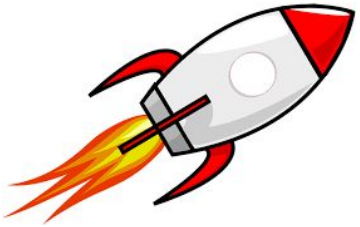


Worksheet Time!

Lets **find** and **open** up our **worksheet**!

There are some **fun** questions inside!

Rockets!



Rockets have been around for hundreds of years but they became part of popular culture when humans landed on the moon in 1969! In this lesson you will design and launch your own rockets!

Where have you seen rockets before?

What were they used for?

Before starting your sketches, consider…

1. What propels the rocket we are building?
2. What controls the direction the rocket travels in?
3. What is available to customize your rocket?

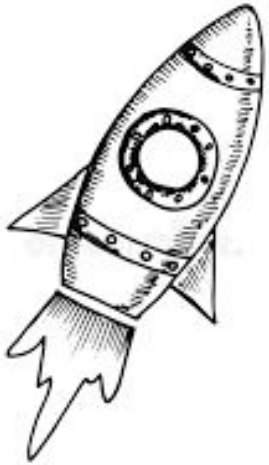
Sketches

Create as many rocket designs as you can, remember sketches are quick and clean!

Example: 	

Choose your best design

Pick your favorite sketch and explain why you think this idea will work the best.



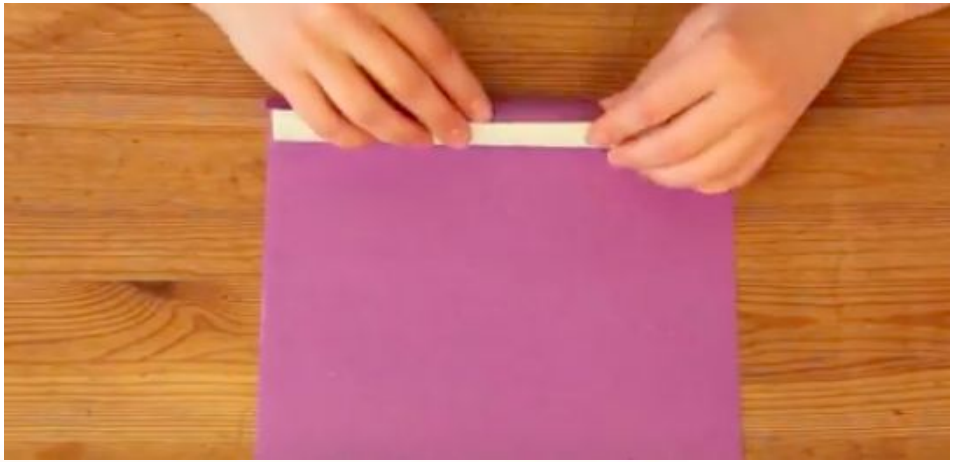
Final picture

Draw a full size picture of your rocket on the large paper in your folder.


Add your payload

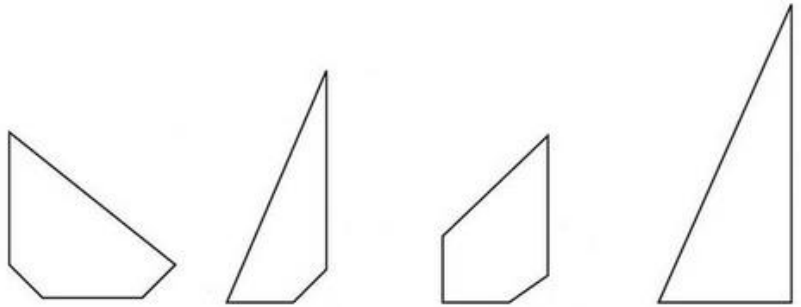
Now let's start **building** our **rocket**!

- First, let’s find our PVC **pipe** and a piece of **paper**.
  - Roll the paper around the pipe and tape so it makes the **body** of the rocket.



Next, we are going to make the **fins**.

- Draw the shape of your **fins** onto a piece of **paper** or the **folder**. (Remember to make more than 1!)



After that is done, cut them out.

- Safely use your scissors and cut your **fins** out.

Now let's **attach** the **fins**.

- Using tape, attach the **fins** to the **body** of your rocket.

Once that is done, remove the **PVC pipe**.

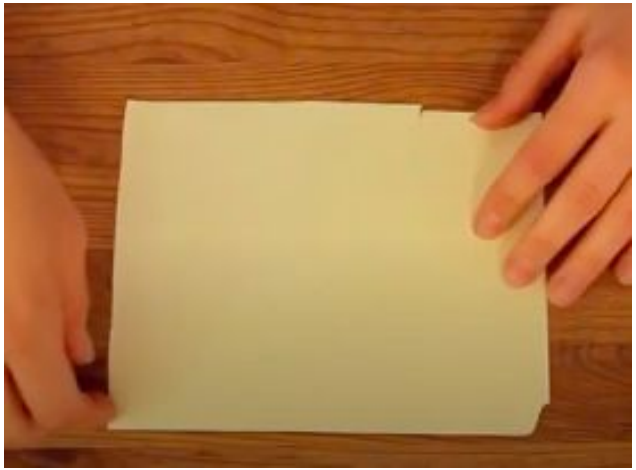
- Carefully remove the **PVC pipe** without damaging your rocket.

Add a **payload** to your rocket.

- Using tape, attach a **ping pong ball** to act as a **payload**.

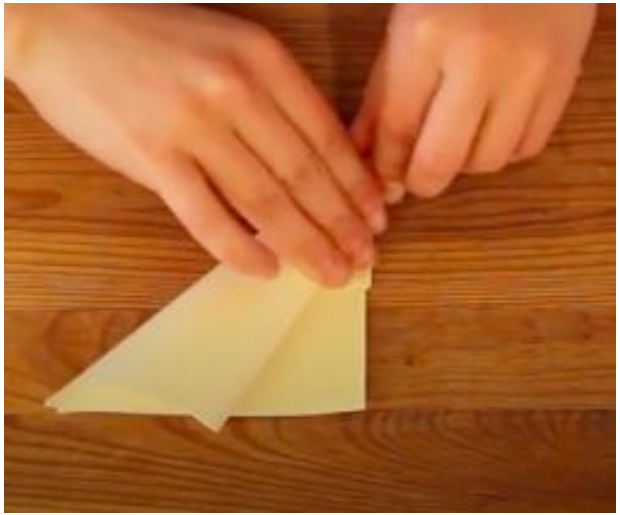
Next, we are going to start making the **nose cone.**

- Using your scissors, cut a **square** out of either the **paper** or the **folder**.



Now let’s make it the correct shape.

- Roll it into a nose cone shape
  - Make it stay together by using tape.

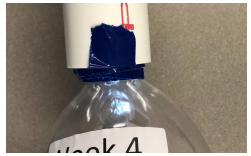


Add the **nose cone** to your rocket.

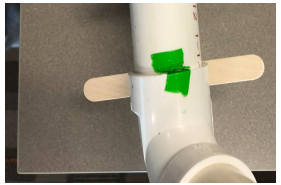
- Using tape, carefully attach your **nose cone** to your rocket.

Now that your **rocket** is done, let's make the **launch device.**

- Your bottle and PVC pipes are color coated. Connect:
  - The blue tape to the blue tape.



  - The green tape to the green tape.



  - And the pipe with **no tape** to the one with **no tape.**

Let’s put it all together.

- Slide your **rocket** onto your **launch device**.
  - But wait, **don’t** launch it yet!

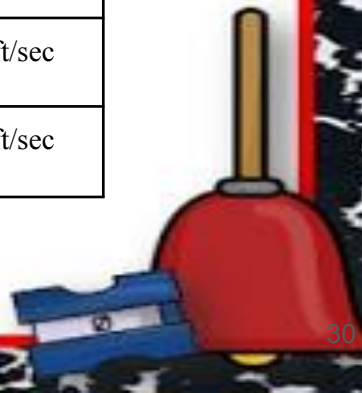
Testing and recording

- We are going to step on the bottle to propel your rocket! Let's record the flight **time** and **distance** traveled in the table below.

Use the formula **Distance ÷ Time = Speed**

Distance (feet)	Time (seconds)	Distance / Time = Speed (ft/sec)
		_____ft ÷ _____sec = _____ ft/sec
		_____ft ÷ _____sec = _____ ft/sec
		_____ft ÷ _____sec = _____ ft/sec





Evaluate

How did your rocket turn out?

Does it look like you wanted it to?

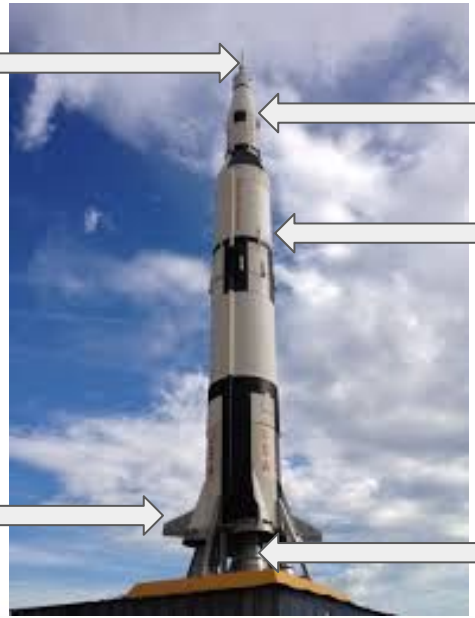
Did the rocket work like you thought?

Looking Back

If you could start the project over from the beginning, what would you do differently?

Rocket Diagram

- Can anyone **name** the **components** of a **rocket**?



That is it for this years **Young Inventors**!

Thank you all for being so **great**!

We hope you had fun! :)