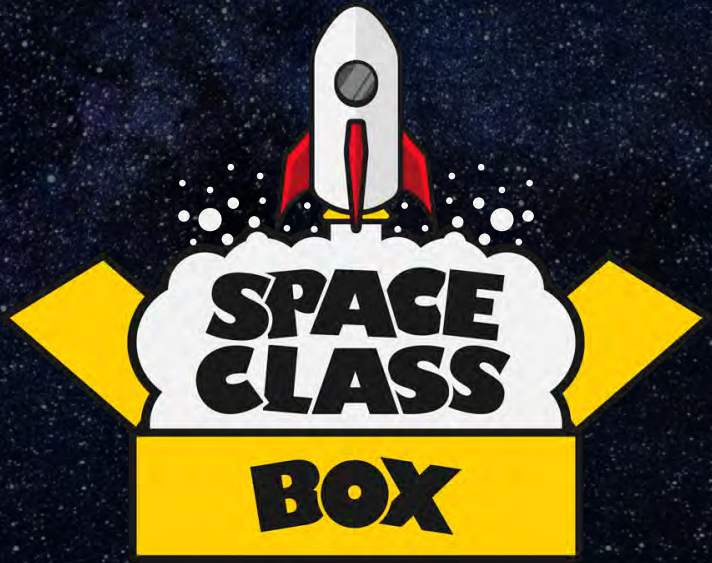
Space Class Box Activity Guide



Rover Activity

Supplies Needed:

- Activity Mat
- Scissors
- Tape
- Crayons
- Mars Helicopter Printout (inside Manilla Envelope)

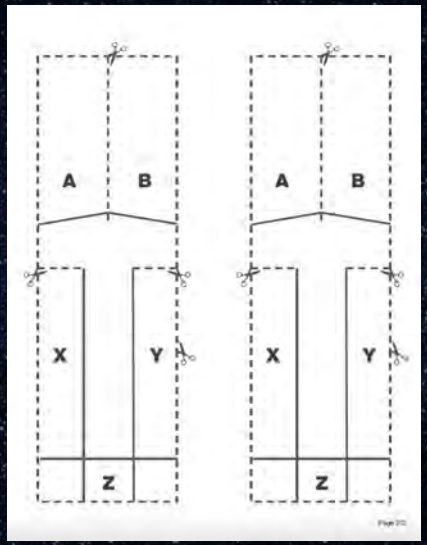
Make a Mars Helicopter

Materials

- Plain paper OR this template
- Scissors
- Crayons
- Tape

Instructions

1. **Design your helicopter:** Using your creative, color and design your helicopter. Put your name on it!
2. **Cut out the helicopter:** Cut along the dashed lines of the template. If you're using plain paper, make a sketch of the helicopter solid and dashed lines as a guide.
3. **Fold along the solid lines:** The propeller blades, A and B, should be folded in opposite directions along the solid lines. The X and Y panels fold toward the centre, and Z is folded upward to give the body of the helicopter rigidity and lower its centre of gravity. Secure it with tape.
4. **Do a test flight!** Stand up and hold the helicopter from its body. Raise it as high in the air as you can. Now, drop it. What do you observe? Why? In the air as you can. Now, drop it. What do you observe? Why? Next, drop the helicopter from a higher spot. (Climb a few stairs or stand on a step stool.) How does the performance change?



Use your materials to create a Mars Helicopter! A helicopter traveled alongside the Mars Rover Perseverance and flew around on Mars!

Submarine Activity

Supplies Needed:

- Activity Mat
- 16-oz of Water (not included)
- Bottle with Cap
- Magic Jellyfish

Use your materials to make the Magic Jellyfish! Fill the bottle with water, add the jellyfish, tighten the cap. Then squeeze the bottle and watch the jellyfish sink! Let the bottle go and the jellyfish with rise back to the top!

(If after a while the jellyfish stops moving, removed jellyfish and blow into one of the tiny holes on the body. This will expel water and then place it back into the bottle.)

Lander Activity

Supplies Needed:

- Activity Mat
- Scissors
- Tape
- Crayons
- Astronaut Figures
- Cardboard Square
- Index Cards
- Cup
- Straws

Use your materials to build a lander that will protect the astronauts when dropped from a height of 6-feet! Make sure it lands right side up! And put your name on it!!

Astronaut Activity

Supplies Needed:

- Activity Mat
- Astronaut Ice Cream

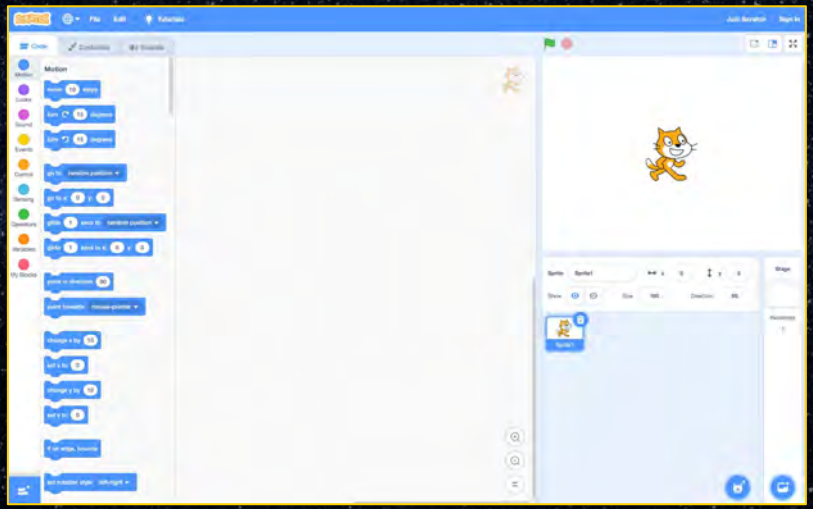
Enjoy eating your freeze dried ice cream!

When we send food to space, we take all the water out of it. Then once it's in space, we add water back to it and then we eat it. But sometimes we don't add water, like with freeze dried fruit. So taste the ice cream without water!

CPU Fundamentals Activity (1/2)

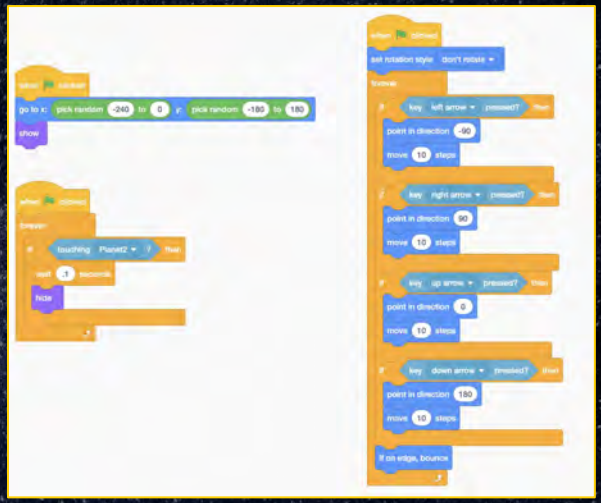
Supplies Needed:

- Coding Printout (inside Manilla Envelope)
- A device with internet to access SCRATCH by MIT



Follow along in the coding printout to build your own game! The planet is trying to capture the alien and you need to control the alien to avoid getting captured!

CPU Fundamentals Activity (2/2)



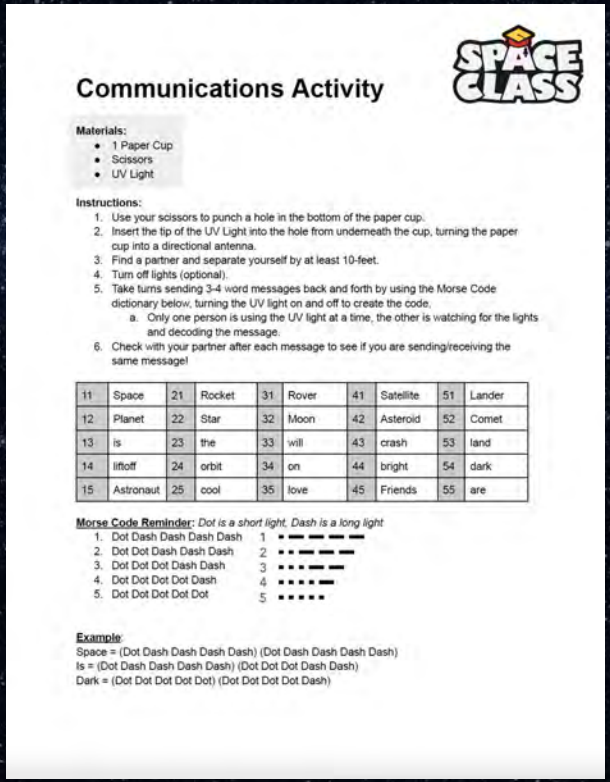
Follow along in the coding printout to build your own game! The planet is trying to capture the alien and you need to control the alien to avoid getting captured!

Communications Activity

Supplies Needed:

- Activity Mat
- Scissors
- Paper Cup
- UV Light
- Communications Printout (inside Manilla Envelope)

Create an antenna with you paper cup and UV Light. Then find a partner and send a Morse Code message to decode!



Communications Activity

Materials:

- 1 Paper Cup
- Scissors
- UV Light

Instructions:

1. Use your scissors to punch a hole in the bottom of the paper cup.
2. Insert the tip of the UV Light into the hole from underneath the cup, turning the paper cup into a directional antenna.
3. Find a partner and separate yourself by at least 10-feet.
4. Turn off lights (optional).
5. Take turns sending 3-4 word messages back and forth by using the Morse Code dictionary below, turning the UV light on and off to create the code.
   a. Only one person is using the UV light at a time, the other is watching for the lights and decoding the message.
6. Check with your partner after each message to see if you are sending/receiving the same message!

11	Space	21	Rocket	31	Rover	41	Satellite	51	Lander
12	Planet	22	Star	32	Moon	42	Asteroid	52	Comet
13	is	23	the	33	will	43	crash	53	land
14	liftoff	24	orbit	34	on	44	bright	54	dark
15	Astronaut	25	cool	35	love	45	Friends	55	are

Morse Code Reminder: *Dot is a short light, Dash is a long light*

1. Dot Dash Dash Dash Dash — 1
2. Dot Dot Dash Dash Dash — 2
3. Dot Dot Dot Dash Dash — 3
4. Dot Dot Dot Dot Dash — 4
5. Dot Dot Dot Dot Dot — 5

Example

Space = (Dot Dash Dash Dash Dash) (Dot Dash Dash Dash Dash)
Is = (Dot Dash Dash Dash Dash) (Dot Dot Dot Dash Dash)
Dark = (Dot Dot Dot Dot Dot) (Dot Dot Dot Dot Dash)

Rocks Activity - Fossils & Sand Layers

Supplies Needed:

- Activity Mat
- Colored Sand
- Dinosaur Fossils
- Bigger Jar
- Clear Glue

Each layer of sand you add represents a different time in Earth history. Build up rock layers with colored sand, putting in one color at a time and adding in as many dinosaur figures along the way. Be careful not to knock it over or shake it up and disrupt the layers! Put your name on it!

After you've finished, pour one layer of clear glue to cover the top layer. Not too much! You need to save the glue for the next activity Nebula in a Jar.

Nebula Activity

Supplies Needed:

- Activity Mat
- Cotton Balls
- Wooden Stick
- Glitter
- Paint
- Clear Glue
- Smaller Jar

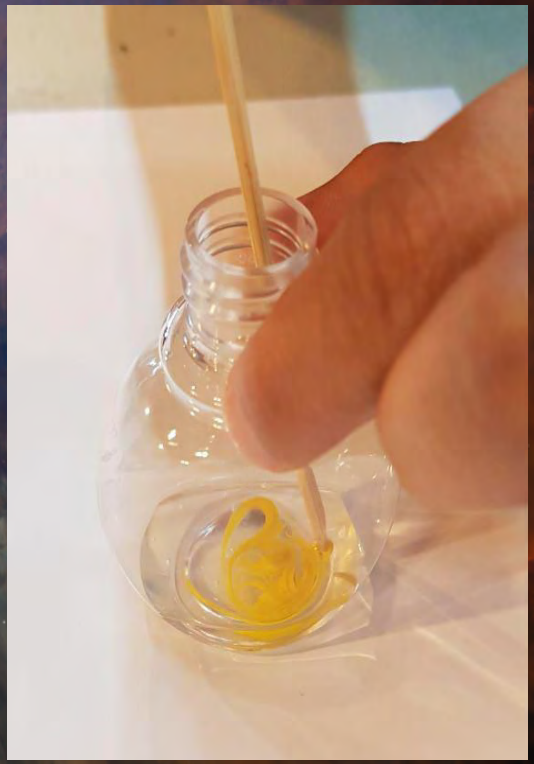
Make a Nebula in a Jar by stretching out cotton balls, putting them into the jar one by one and adding paint and glitter along the way. Use the stir stick to mix up the paint and glitter until the cotton ball absorbs the color. Then add another cotton ball and continue! And remember, put your name on it!

Individual steps on next page.

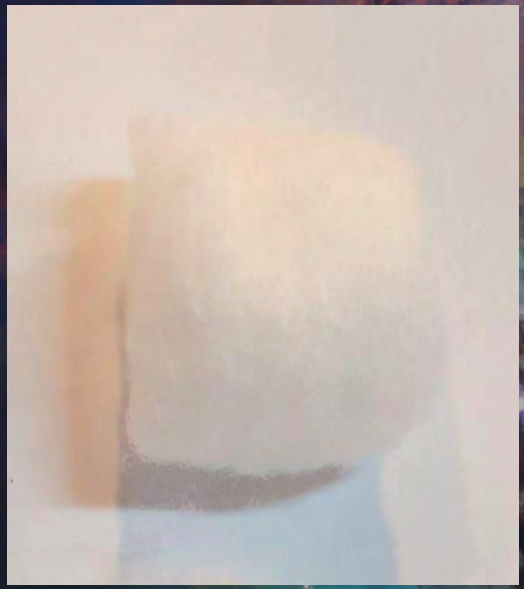
Step 1. Set up

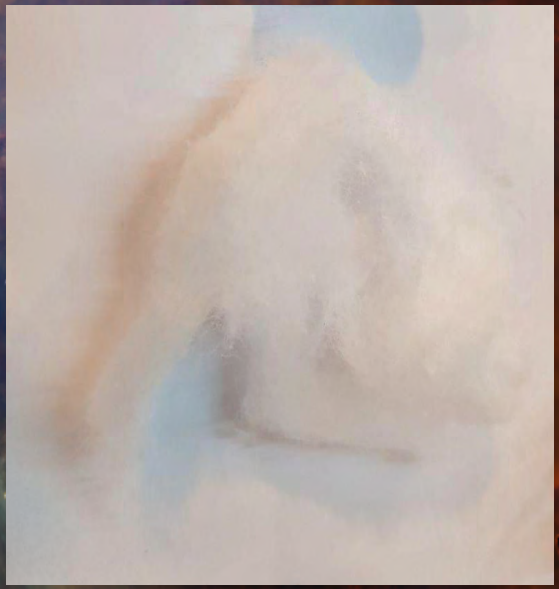
Step 2. Fill up the bottle with some glue.

Step 3. Put in a few drops of paint, and blend with the glue. If you want, add some glitter.



Step 4. Stretch out a cotton ball, and put it in the bottle.



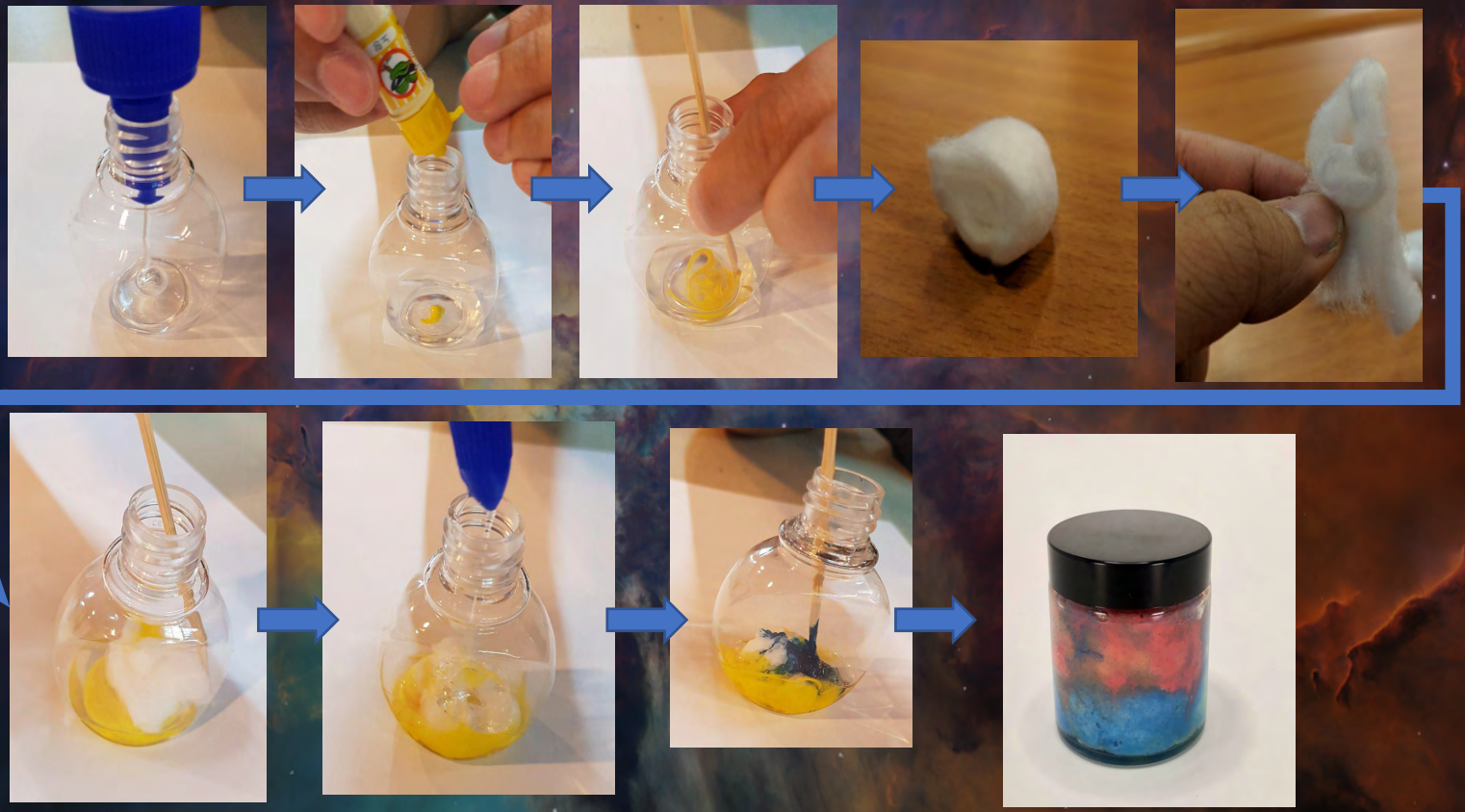


Step 5. Push the cotton until it absorbs the paint glue.

Step 6. Repeat the previous process until the bottle is full.

Step 7. Clean up your place and wash your hands.

Steps Overview



Spectroscopy Activity - UV Bracelets

Supplies Needed:

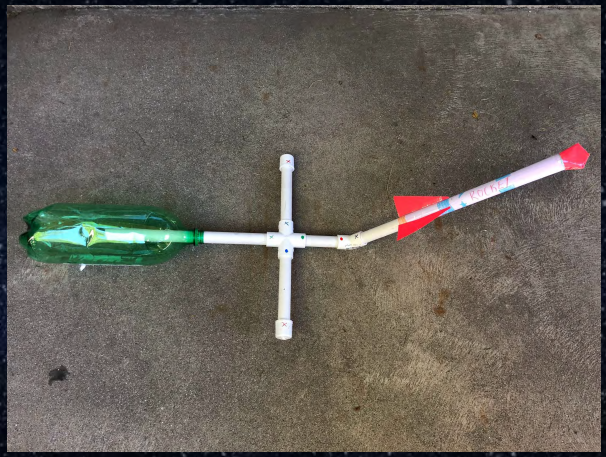
- Activity Mat
- Scissors
- Tape
- Beads
- String
- Pipe Cleaners
- UV Flashlight

Build your own UV Bracelet by taping one end of the string or pipe cleaner to your activity mat, then add on beads until there are enough to go around your wrist. Then tie the ends of the string together, you may need an adult's help, or twist the pipe cleaner ends together. Then use the UV flashlight to shine on the beads and watch them glow and change colors, even after you turn the flashlight off!

Rockets Activity

Supplies Needed:

- Activity Mat
- Crayons
- Tape
- Scissors
- White Paper
- Colored Paper
- PVC Pipes
- 2-Liter Bottle



Assembling your own rocket launcher and rocket. Put your white paper around the long pipe and tape it so it stays in a tube shape. Then use the colored paper to make 2-4 fins. Tape the fins to your rocket. Pinch the top of your rocket closed and tape it to make a nose cone. Put your name on it! Then remove the pipe. Put together the PVC pipes so the colored symbols line up. Slide your rocket onto the pipe, place your bottle on the other end, aim it away from people, then jump on the bottle to launch your rocket!

Individual steps on next page.

Let's Build a Rocket! - Step 1

Roll the full sheet of paper snugly long ways around the pipe then tape it in place. Not too tight though, it needs to be able to slide off and on the pipe multiple times.

Let's Build a Rocket! - Step 2

Make 2, 3, or 4 right triangles out of the colored paper to make the fins. Fold the colored paper diagonally 3 or 4 times to make triangles for fins. Fold the longest side of the right angle about 1/4 inch. Tape the fins to the bottom of the rocket. Decorate with crayons and put your name on it!

Let's Build a Rocket! - Step 3

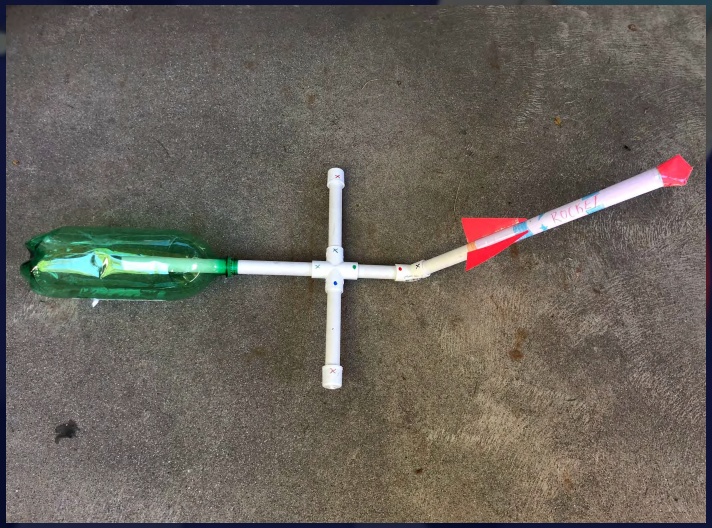
Make a nose cone by closing the top of the rocket and sealing it with tape. You can just pinch it closed, fold it over, fold it into a triangle, or use extra colored paper to make a nose cone! What's important is that it is sealed closed so no air can get out when it is launched.

Let's Build a Rocket! - Step 4

Assemble the pipes so the colored parts match up.

Let's Build a Rocket! - Step 5

Slide your rocket onto the pipe, place your bottle on the other end, aim it away from people, then jump on the bottle to launch your rocket!

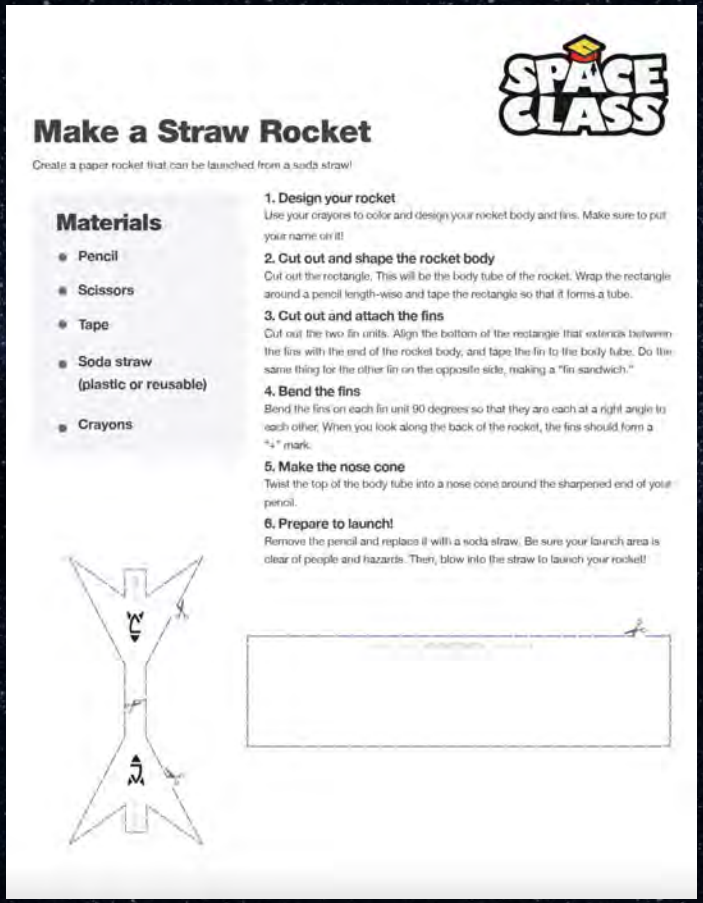


BONUS Activity
Soda-Straw Rocket

Supplies Needed:

- Activity Mat
- Scissors
- Crayons
- Tape
- Pencil
- Staw
- Rocket Printout (inside Manilla Envelope)

Follow the instructions on the printout and make a soda straw rocket to launch!



SPACE CLASS

Make a Straw Rocket

Create a paper rocket that can be launched from a soda straw!

Materials

- Pencil
- Scissors
- Tape
- Soda straw (plastic or reusable)
- Crayons

1. Design your rocket
Use your crayons to color and design your rocket body and fins. Make sure to put your name on it!

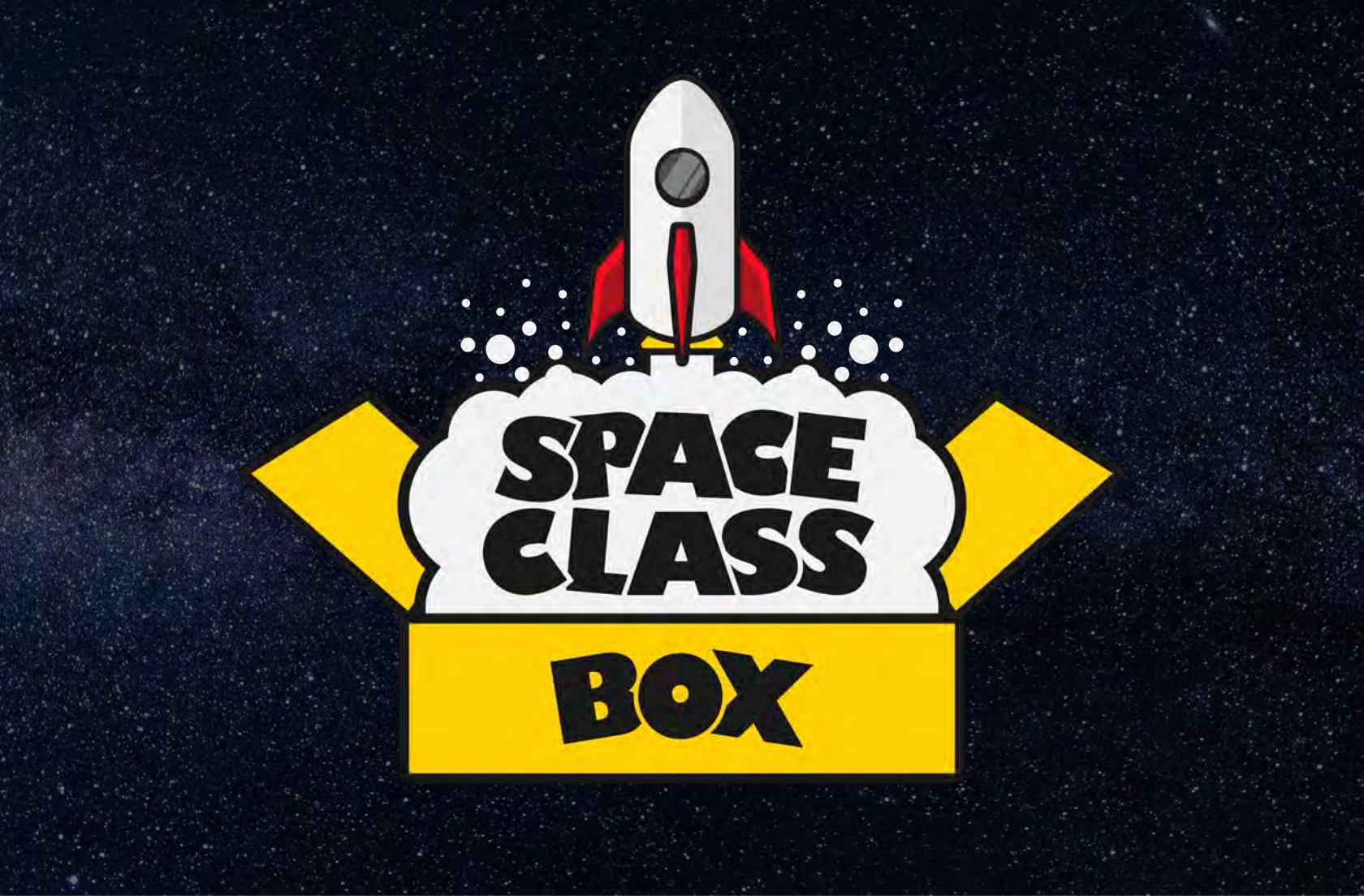
2. Cut out and shape the rocket body
Cut out the rectangle. This will be the body tube of the rocket. Wrap the rectangle around a pencil length-wise and tape the rectangle so that it forms a tube.

3. Cut out and attach the fins
Cut out the two fin units. Align the bottom of the rectangle that extends between the fins with the end of the rocket body, and tape the fin to the body tube. Do the same thing for the other fin on the opposite side, making a "fin sandwich."

4. Bend the fins
Bend the fins on each fin unit 90 degrees so that they are each at a right angle to each other. When you look along the back of the rocket, the fins should form a "+" mark.

5. Make the nose cone
Twist the top of the body tube into a nose cone around the sharpened end of your pencil.

6. Prepare to launch!
Remove the pencil and replace it with a soda straw. Be sure your launch area is clear of people and hazards. Then, blow into the straw to launch your rocket!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