

# “In Outer Space”



## Module 9, Adventure 1

### Prompt:

Planetariums use special projectors to show the stars. Make your own star projector to look at stars any time of the day!

### Materials:

- Recycled items, such as toilet paper tubes, scraps of paper, egg cartons, cereal boxes, yogurt containers, etc.
- Thumb tack, push pin, or something with a sturdy and small point for making holes in various materials (stars)
- Tape and/or glue
- Scissors
- A flashlight, headlamp, or phone flashlight
- Assorted craft supplies, such as string, rubber bands, pipe cleaners, craft sticks, paper clips, brass fasteners, etc.
- *Optional: Aluminum foil*
- *Optional: Explorer Notebook*

### Instructions:

1. Your star projector will work by placing something that has small holes punched in it on a light source. When the light from your light source shines through the holes, it will look like stars!
  - a. Check out the next page to see the start of some designs.
2. Look at the materials you have to work with and pick your light source.
  - a. Will you use a flashlight, headlamp, or the flashlight on a phone?
3. Use the materials to make a projector that:
  - a. Stands on its own
  - b. Is close to the light source

- c. Focuses the light onto the ceiling
4. Pick a material for the top that will show the stars. We recommend aluminum foil or a lightweight cardboard, like from a cereal box. Decide on where you would like the stars to be. You can add your constellation to your starscape!
5. Have a grown-up safely help you make the holes where you want the stars to be.
6. Find a dark space and put your star projector over the light source and look up to see all the stars that you created!

*For explorers using an Explorer Notebook:*

1. Sketch out your design before you build.
2. Make the pattern of the stars you want to be shown on your projector.

Check out the last page for a page design idea. You can use this or set up your page however you want!

## **Resources:**

1. For some inspiration, check out the start of these two designs.



## **Extensions:**

The following are optional steps you can take if you want to extend this adventure:

1. Make your star projector move so it looks like the stars are slowly moving across the sky.
2. Create different tops for your star projector so you can look at different stars.
3. Use your projector to design a planetarium show. Invite people at home to come to the show and learn about the stars they see.
4. Project the stars onto something close to your projector and then project the stars onto something farther away. What do you notice about the projections? How are they the same or different?
5. Go to the “In Outer Space” topic on Flipgrid and share your creation!

## Explorer Notebook

You can use this to help you set up your Explorer Notebook!

### Star Projector Module 9, Adventure 1

Sketch of my star projector:



The star pattern for my star projector:



