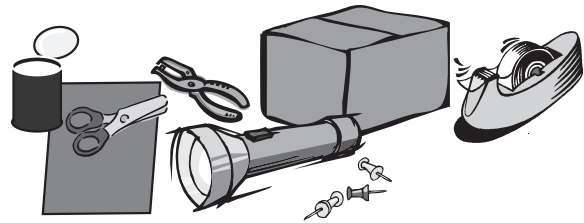


Hand-Held Constellation Projector

Follow these directions to make a hand-held star projector and constellation disks to show in a darkened room. The size and brightness of the flashlight, darkness of the room, and size of the star holes all affect clarity and the distance at which the constellation can be viewed—so be sure to experiment with it in advance.

What you need:

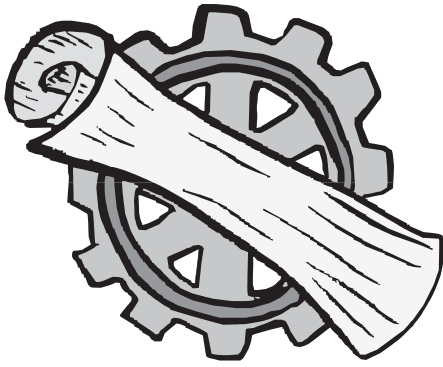
- flashlight with removable lens in front of the bulb
- metal can (with both ends removed) or sturdy cardboard tube at least 1" larger in diameter than flashlight lens
- black paper
- black cardboard or foamcore
- scissors and strong black tape
- pushpin, sharp pencil, and hole punch



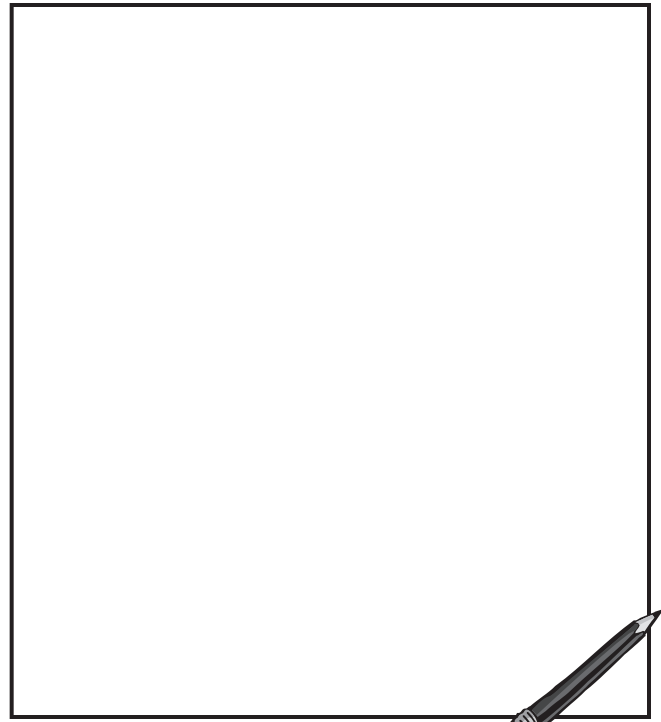
What you do:

- Unscrew the front flashlight casing and remove the lens.
- Cover the cone-shaped reflecting surface around the bulb completely with black paper.
- Replace the lens and front casing.
- Line the inside of the can or cardboard tube with black paper.
- Cut a circle of black cardboard or foamcore exactly the size of the can or tube. Cut a smaller circle from the center of this circle exactly the size of the flashlight handle.
- Assemble your projector: Insert your flashlight into the center of the cardboard or foamcore circle so the circle fits between the head and the control switch. Tape it securely in place. Tape the circle securely onto the can or tube so that the head of the flashlight is enclosed, covering any spaces the might let light in.
- Cut a disk slightly larger than the can or tube from the black cardboard or foamcore for each constellation you want to show.
- Create the arrangement of stars for each constellation on a disk using the pushpin for dim stars, the pencil tip for medium stars, and the hole punch for bright stars.
- To project a constellation, tape or hold a disk securely against the front of the projector, aim the projector at a wall in a dark room, and turn on the flashlight. Rotate the disk and adjust distance from the wall to see the constellation clearly and in proper position.

By: _____



Inventor's Log

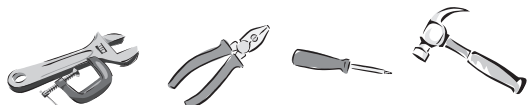


Draw a picture showing an astronaut using your tool or machine.

What do you call your tool or machine?

Why would an astronaut need your tool or machine?

What does your machine do and how does it work?



How long did it take to build your tool or machine?

How much would you charge for your tool or machine?

Could your tool or machine be used on earth? Explain.

What surprised you when you were building your tool or machine?



Is There Intelligent Life Out There?



What do you think? Take a minute to answer these questions. You don't need to sign your name.

Yes **No**

- Is there intelligent life out there anywhere in the universe?
- Is there intelligent life in our solar system?
- If you answered "yes" above, do you think we'll find it?
- If you answered "yes" to the last question, will we find it in the next century?

If you answered "yes" to any of the questions above, continue:

- Do you think we will meet beings that are less advanced than ourselves?
- More advanced?
- Some of each?
- Do you think there are alien beings observing us now?
- Do you think there are alien beings trying to communicate with us now?
- If we find intelligent aliens, will we relate to other beings in peaceful ways?
- Will we have war with intelligent aliens from other parts of the universe?
- Do you think we should continue to fund and support the search for life on other worlds?



Comments:

Thank You For Your Opinions!