

A vibrant space-themed background featuring a red rocket launching from Earth, a ringed planet (Saturn), Jupiter, and a colorful nebula in the distance.

SPACE ***EXPLORATION***

Experiment Manual

 **Thames & Kosmos[®]**

SPACE EXPLORATION

Kit Contents



Your Space Exploration Experiment Kit contains the following parts:

No.	Name	Quantity	Item No.	No.	Name	Quantity	Item No.
1	Graduated beaker	2	061150	12	Rocket	1	701450
2	Drinking straw	3	000414	13	Launch pad for rocket	1	701451
3	Ocular lens	1	701378	14	Rubber band	2	700420
4	Field lens	1	701780	15	Die-cut sheet I, 1 and 2 (thick cardboard)	1	704464
5	Objective lens	1	701379	16	Die-cut sheet II, 1 to 5 (thin cardboard)	1	704463
6	Styrofoam ball	1	000172	17	Constellation sheet	1	704465
7	Cotton ball	1	701383	18	Moon flip book theater sheet	1	704466
8	Wooden skewer	2	020042				
9	Two-prong fastener	1	020039				
10	Modeling clay	1	000588				
11	Bag of balloons	1	701392				

Also required:

Scissors, adhesive tape, glue, nylon string/sewing thread, tear-proof string, effervescent tablets or powder, or baking powder, 2 large paper clips, ruler, flashlight, measuring tape, thumbtacks, felt-tip markers, pencil, yellow crayon, permanent marker, paper, compass (for drawing circles), flour, black paper, aluminum foil, blow-dryer, heat-resistant mat, compass (optional)

The materials not contained in the kit are shown in italics in the experiments.

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A Look to the Stars

04 Experiment

Space Telescope

You don't have to be an astronaut to explore space. With your new telescope, you will be able to discover quite a lot from your spot here on the Earth!

Materials: 2 tubular parts (objective and ocular tube) from die-cut sheet (II-1 + 3), 3 lens holders from die-cut sheet (II-2 + 4), 3 lenses; *glue, 2 large paper clips, long ruler*

→ Preparation:

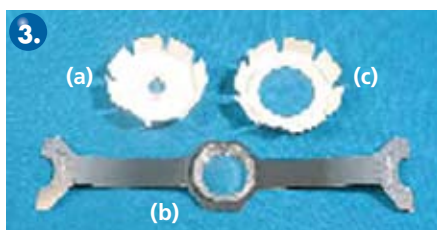
Detach the parts from the die-cut sheet and fold them along the specified lines. Form the objective and ocular tubes and



glue them together. If you affix a paper clip to each of the glued spots, they hold together better while drying. You can also press against the glued spots with a ruler to achieve a better hold.

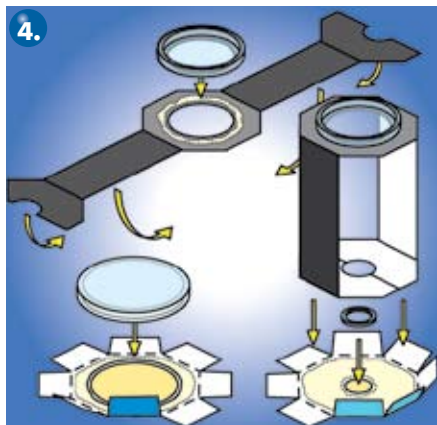


Now glue the lenses in place: The smallest one (the ocular lens) goes into the light blue ocular lens holder (a); the medium-sized one (the field lens) goes into the long field lens holder (b); and the largest one (the objective lens) goes into the dark blue objective holder (c).



Glue the ocular and objective lenses onto the unprinted sides of their holders. Always apply the glue to the cardboard first. Affix the objective lens to the holder with its curved side facing down, but affix the other two lenses to their holders with their curved sides facing up.

Now glue the long holder with the field lens to the inside of the light-blue



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ocular lens holder. Affix the holders to the telescope tubes: To do this, push the holder with the two lenses into the



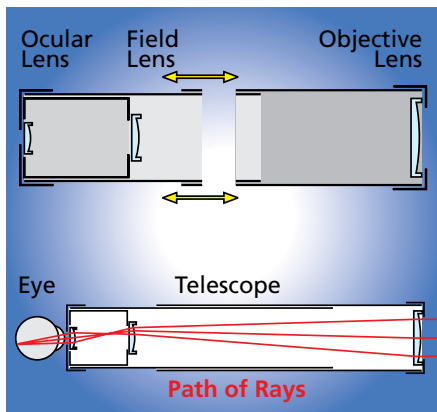
narrower tube so that you can glue the holder to the light blue gluing surfaces. Then slide the smaller of the two finished tubes into the larger one.



➔ Usage Instructions:

By carefully moving the tubes, you can bring the image into focus. It's best to practice focusing during the day. In order to keep the telescope as still as possible, you can place it on a forked branch, fence, or the back of a chair. A tripod is even better, but not necessary.

When you look through the telescope, you may be surprised to see that everything is upside-down. That is typical of a **Kepler telescope**. When observing the heavens, however, this doesn't matter, since there is no up and down in space.



i Why?

Your telescope has a magnification of about 10 times. This is why things that are a long way away appear closer and clearer. You can see craters or the seas on the Moon much better with the telescope than with the naked eye.

Your telescope consists of 3 lenses. The large one in the front is the objective lens. It bundles the weak light from the stars together into its focal point. It is here that an intermediate image is first formed, but it cannot yet be seen with the small ocular (a magnifying glass). First, the field lens (illuminating lens) is needed: It guides the light from the intermediate image onto the small ocular. So what you are seeing through the ocular lens is actually an enlargement of the image that is caught by the objective lens!



Safety Tip

CAUTION! Never look at the Sun — with your naked eye or with the telescope! It can blind you! Never place the optical lenses in direct sunlight either — it is a fire hazard!