



50mm Newtonian Telescope

#22014



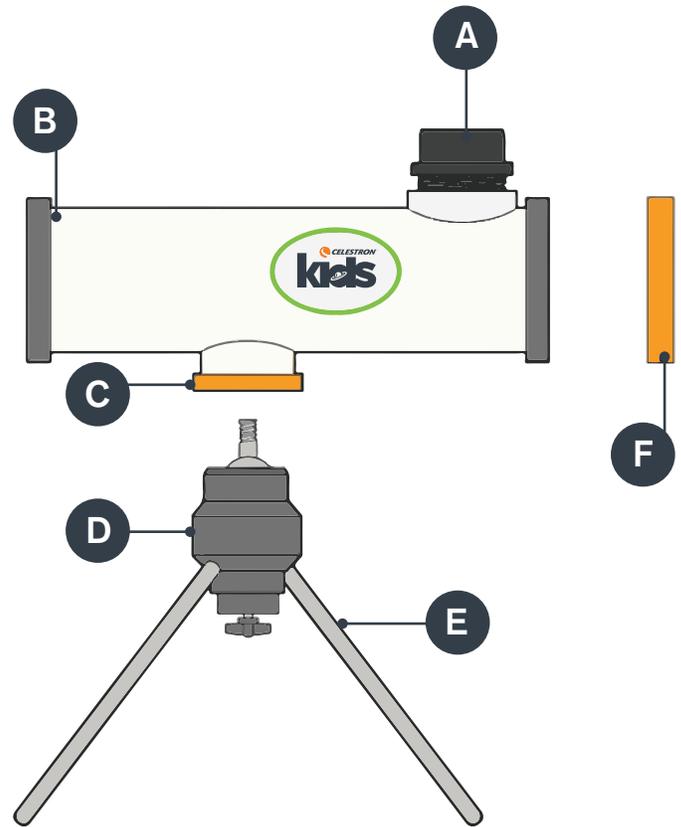
Solar Warning

- Always use your telescope with adult supervision.
- Never look directly at the Sun with the naked eye or with a telescope unless you have the proper solar filter. Permanent and irreversible eye damage may result.
- Never use your telescope to project an image of the Sun onto any surface. Internal heat build-up can damage the telescope and any accessories attached to it.
- Never use an eyepiece solar filter or a Herschel wedge. Internal heat build-up inside the telescope can cause these devices to crack or break, allowing unfiltered sunlight to pass through to the eye.
- Do not leave the telescope unsupervised, especially when children are present or when adults unfamiliar with the correct operating procedures of your telescope are present.

Thanks for buying the Celestron Kids STEM 50mm Newtonian Telescope—a real, functional reflector telescope with a removable panel that reveals its inner workings! Before using your telescope, take a few minutes to make sure all the components are in the box and assemble the scope.

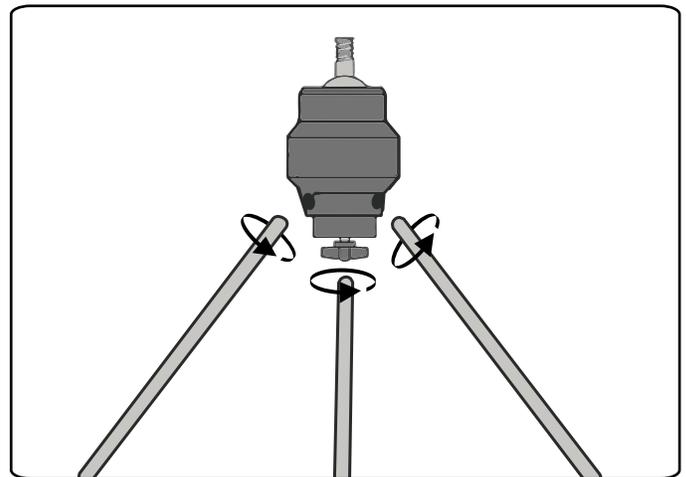
Parts

- A. Eyepiece
- B. Telescope Tube
- C. Tripod Adjustment Collar
- D. Tripod Hub
- E. Tripod Legs (3)
- F. Dust Cap

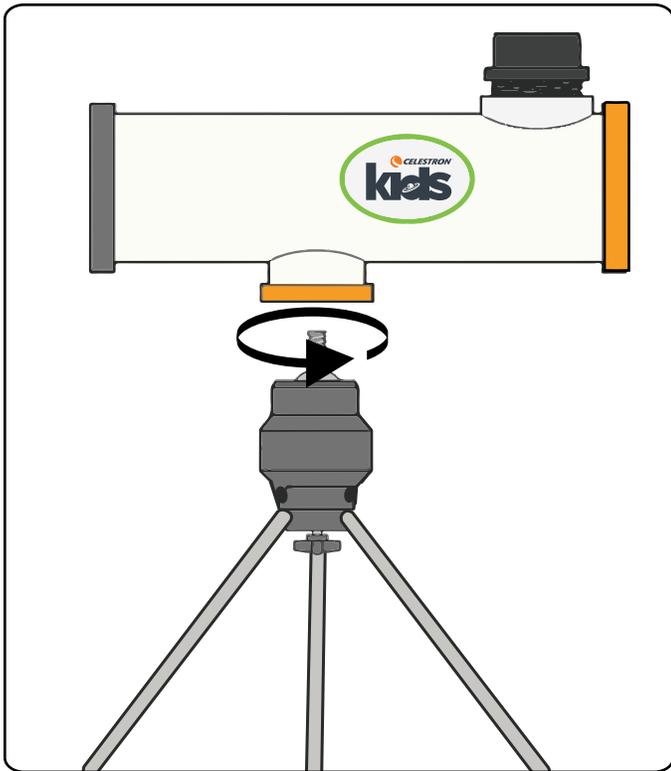


Assembly

Step 1: Remove all the parts from the box.

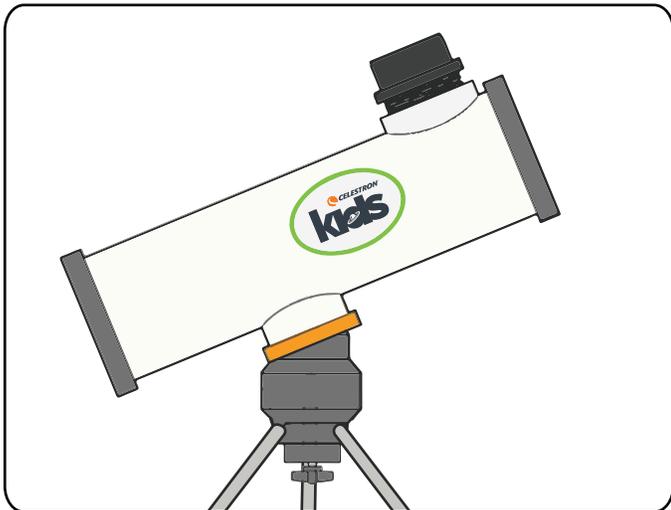


Step 2: Attach the 3 tripod legs to the tripod hub by screwing them into the threaded holes.



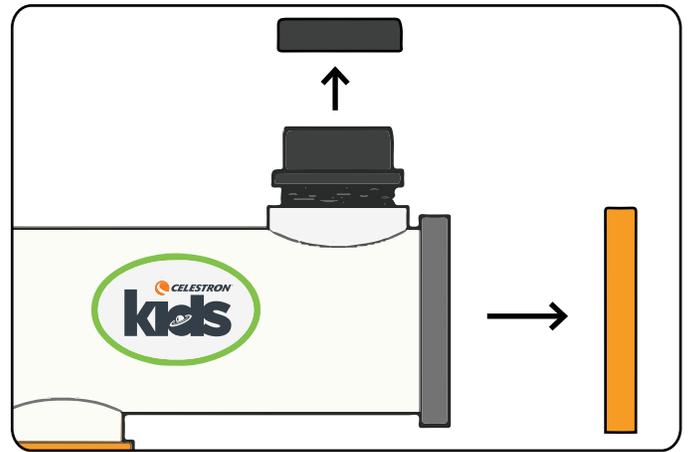
Step 3: Attach the main telescope tube to the tripod hub. To do this, locate the threaded hole on the base of the main telescope tube and the threaded rod on the top of the tripod hub. Screw the rod into the hole.

Step 4: Tighten and adjust by rotating the tripod adjustment collar.



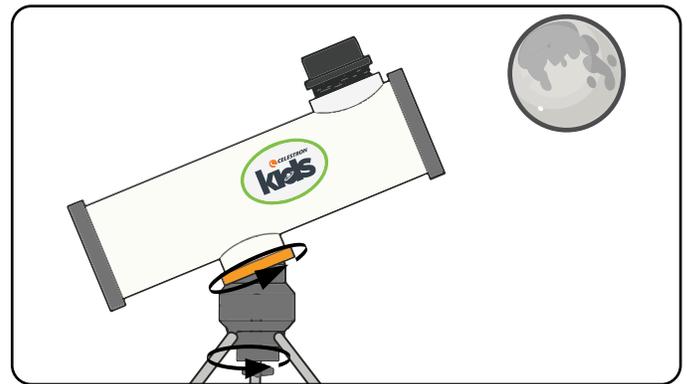
YOU ARE NOW READY TO USE YOUR TELESCOPE!

Use Your Telescope



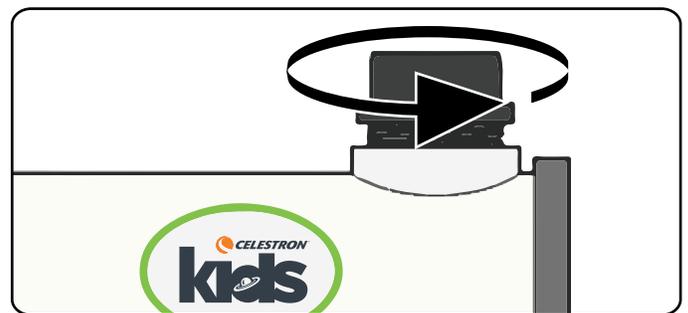
Step 1: When you are ready to view through your telescope, remove the plastic cover on the eyepiece.

Step 2: Remove the dust cap.



Step 3: Point your telescope at the target you wish to view.

- a. Adjust the ALTITUDE (up-and-down position) by loosening the thumb screw on the bottom of the tripod hub and angling the telescope up or down.
- b. Adjust the AZIMUTH (horizontal position) by loosening the tripod adjustment collar, rotating the telescope, and then retightening the tripod adjustment collar once in position.



Step 4: Look through the eyepiece and bring your subject into focus by rotating the collar on the base of the eyepiece.

What is a Newtonian Telescope?

You might be asking “why is this called a Newtonian telescope?” Well, it’s because it was invented by Sir Isaac Newton himself. In case you didn’t know, Sir Isaac was one of the world’s most renowned Scientists and Philosophers. Around 1668, in-between formulating the laws of gravity, advancing calculus and discovering that white light is made up of ALL colors, he took some time to create a better telescope design that would cut out “chromatic aberration” (blurry images). He did this by removing lenses and replacing them with mirrors. This basic design is still used today, some 350 years later!



How does it work?

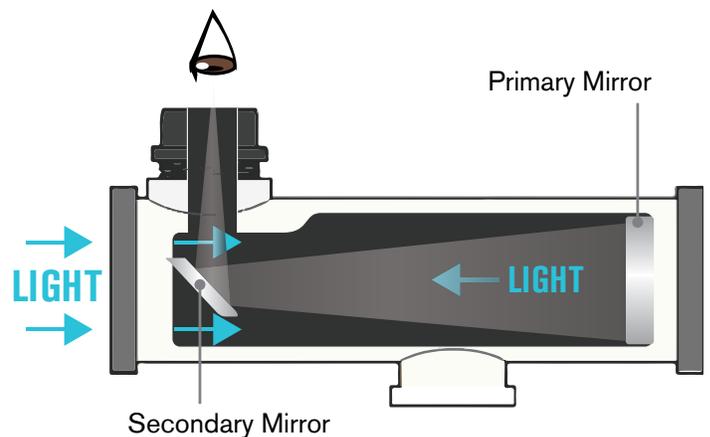
So, it’s called a Newtonian, because of who invented it. But it’s also called a “reflector,” because of how it works. At the heart of the Newtonian telescope is a system of mirrors that gather and reflect light to your eye. Luckily, the Celestron STEM Newtonian 50mm Telescope has a removable panel on one side, so you can see the inner mirrors for yourself. Here’s how the telescope works:

Your eyes take in light from the world around you and form images that are sent to your brain, allowing you to SEE the objects you are looking at. The Newtonian telescope uses mirrors to reflect that light in a small space (the telescope tube) and direct it through the eyepiece, magnifying the object before it reaches your eye.

The light enters the telescope tube at the open end, travels all the way to the primary mirror, at the opposite end of the tube, where it is reflected to the secondary mirror. The secondary mirror is mounted at a 45° angle, which diverts the light to the eyepiece.

The eyepiece magnifies the image and passes the image to your eye.

Now that you know the history, get out there and use your Celestron Kids Newtonian Reflector telescope. Start by pointing at the moon, or stars, and remember: **NEVER LOOK AT THE SUN THROUGH YOUR TELESCOPE. PERMANENT DAMAGE TO YOUR EYES MAY RESULT**



How to Determine your Telescope’s Magnification

To determine the magnification level of your telescope with a given eyepiece, use this simple calculator:

$$\text{FOCAL LENGTH OF TELESCOPE (FL(T))} \div \text{FOCAL LENGTH OF EYEPIECE (FL(EP))} = \text{MAGNIFICATION (MAG)}$$

$$\text{FL(T)} \div \text{FL(EP)} = \text{MAG}$$

Your Celestron Newtonian STEM Telescope has a 200mm focal length. The eyepiece included is a 10mm eyepiece. Can you figure out what the magnification is?

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

SPECIFICATIONS	
Optical Design	Newtonian Reflector
Aperture	50mm
Focal Length	200mm
Focal Ratio	F4
Optical Coatings	No
Eyepiece / Magnification	10mm/20x
Diagonal	NA
Finderscope	NA
Other Accessories	Easy carry, easy breakdown tripod
Resolution	NA
Light Gathering Power	51.02x
Highest Useful Magnification	20x
Lowest Useful Magnification	20x
Limiting Stellar Magnitude	NA
Tripod	Yes- Short leg 1/4-20 threaded post, ball joint
Warranty	2 year
Optical Tube Length	8.3125" (211.14mm)
Optical Tube Weight	.5625 lb (255 g)
Total Telescope Kit Weight	1.0 lb (453 g)

NOTE:

- NEVER point your telescope at the Sun. Permanent damage to your eyes may result.
- When observing land-based objects, images will appear upside-down.
- For more information and downloads, please visit www.celestron.com

Starry Night Software Download

Your new Celestron product includes Starry Night Basic Edition, a \$49.95 value, at no extra charge!

- The world's most advanced astronomy software that turns your computer into an interactive planetarium
- Powerful tools help you find stars, constellations, planets and galaxies, and learn all about the cosmos

DOWNLOAD INSTRUCTIONS:

1. Visit celestron.com/astronomy-software. You will be redirected to Starry Night
2. Enter the 6 digit download code printed on the insert card included with your telescope

3. Follow on screen instructions to obtain your username and registration number for your digital copy of Starry Night Celestron Basic Edition software
4. Starry Night will email you with download and registration instructions

