

How To Make A Telescope

To begin, all you need to do is understand the principles of what makes a telescope work. Let's start off simple...



How To Make A Telescope From Household Items:

For this simple telescope, you will need some aluminum foil and one magnifying lens. The lens doesn't need to be anything more complex than an ordinary toy magnifying glass.

Instead of needing an optical tube assembly, your arms will become the telescope body and the magnifying glass will act as the telescope's objective lens.

First we'll create an "eyepiece" by puncturing a hole in a tiny piece of foil. Begin by holding your pinhole eyepiece against your eye and look at a brightly lit scene. Now, put the magnifying lens against it and move slowly outward. You'll know when it's working!

Try different distances and see where the image appears right side up – or upside down. Then try putting the pinhole eyepiece in front of the lens and you'll be surprised! The pin hole in the foil removes image blur. To make a more precise pinhole, layer the foil when puncturing and choose the best.

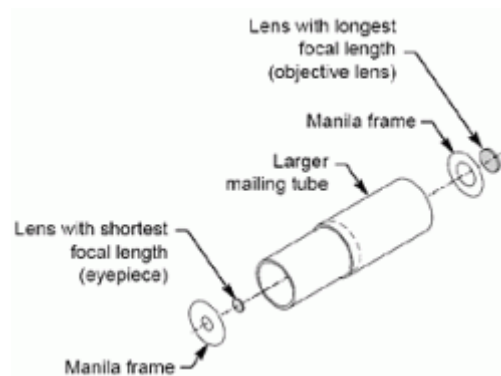
Small holes seem to provide the best image, but experiment with them all. It's hard to believe you could make a telescope so simply, but it's true. The pinhole projector, minus the lens, has been in use for centuries and was the basis for one of the very first solar telescopes.

However, remember your simple science principles and what happens when you focus [the sun](#)'s rays through a magnifying glass. Your retina will burn far more quickly than any piece of paper! Never focus any kind of optical aid towards the [Sun](#) without a proper solar safety filter.

How To Make A Telescope – A Simple Refractor Telescope:

Now let's add another toy magnifying glass lens (so we have one large and one small), a manila file folder and two cardboard tubes, with one that will fit inside the other.

First let's determine the focal length of our lenses. You can do this easily by shining a flashlight into the lens and measure the distance inches from the lens to where it



projects a small, bright point. Add the focal length of the two lenses together, divide by two and add one more inch.

Cut both of your cardboard tubes to that length. Using the manila file folder, cut out two circles the same diameter as the cardboard tubes and cut a circle in the middle slightly smaller than the diameter of the two lenses. Run a bead of glue around the center hole and center your lens to be glued in place.

When it is thoroughly dry, run a bead of glue around one end of both cardboard tubes and set your “lens cells” into place. When your glue is set, just slide the open end of the smaller tube into the open end of the larger tube and you have made your own simple refractor telescope! You can adjust the “focus” by the amount of slide.



How To Make A Telescope – The Telescope Kit:

If you're interested in doing a classroom project there are many fine companies that offer inexpensive refractor telescope “kits”.

These kits can be as simple as the cardboard tube style which we have just explored, to elaborate models which replicate antique historical telescopes.

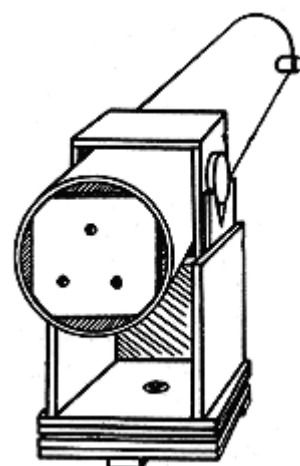
A great project for your astronomy club or students is the [Galileoscope](#), a replica of the “telescope that started it all”.

How To Make A Telescope – The Dobsonian Reflector:

If you find yourself fascinated with how to make a telescope and want to have a genuine astronomical instrument, you might be interested in getting some plans from the man himself – John Dobson.

As the founder of the San Francisco Sidewalk Astronomers, John offers his [Build Your Own Dobsonian Telescope Plans](#) freely and all it takes is a little knowledge and the right parts.

If you have a question about telescope making, or are looking for innovative design ideas, there are plenty of resources available such as the [Amateur Telescope Maker](#) webpages.



Have fun learning how to make a telescope! Tammy Plotner