

Activity: Telescope

On SCOPE's Things that.. go bump in the night episode, you saw Julia make a simple telescope. Here's how she did it:



What you need:

2 lenses of different magnifying power

(magnifying glasses work well or a pair of cheap glasses from the chemist)

The greater the difference, the more magnifying power your telescope will have

What to do:

1. Work out which lens is weaker or stronger. You can do that by looking at something through each lens and finding out which one magnifies the image the most- the lens that gives the bigger image is the stronger lens.
2. The weaker lens will be the objective lens- hold this one at arms length.
3. The stronger lens will be your eye piece- hold this one close to your eye.
4. Adjust how far apart the two lenses are to find a clear image, which is called the focal point!
5. Once you have mastered that, see what happens when you swap the two lenses around!

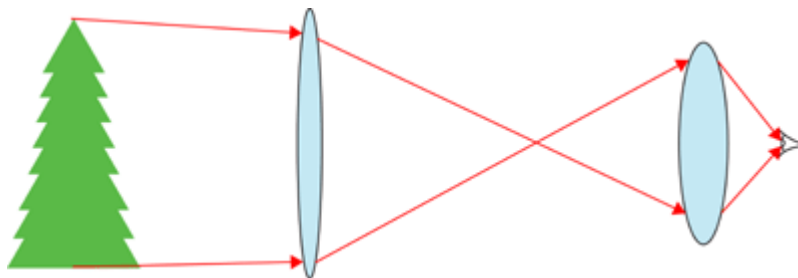
What's happening?

So what is a telescope? Well, they usually have a series of either mirrors or lenses to capture light and make things look bigger so they can be studied.

Our telescope is using lenses, which makes it a refracting telescope; others that use mirrors are called reflecting telescopes. Refraction is basically bending light. Normally, light can only travel in straight lines, but with our lenses, we can change all that!

Finding the focal point can take some time, and you'll need to readjust the lenses to look at things at different distances. But once you have a clear image, you might notice that it is upside down!

Why? Well, that's because the lenses are bending the light. The light from the top of the object and the light from the bottom of the object cross over between the two lenses.



So what happens when you swap the lenses around? Well, the stronger lens is now closer to the target, and the weaker one is closer to your eye. The image is still upside down, but now it's smaller!