

Script for Sun Viewer Presentation

Slide 1:

(Title)

Slide 2:

This is what you will see when you use your sun viewer to view a projected image of the Sun. The sun viewer will work best on a sunny day, or you can try it out with a regular lamp either.

Slide 3:

This ray diagram shows where the light we see is coming from. Following each coloured ray of light from the sun, through the pinhole, and onto the screen, we can see that the light we see on the screen is the light from the Sun. If we follow the red ray alone, we can see that it was on the left side of the sun, but is on the right side of the image of the Sun. The other rays also get flipped through the pinhole. This tells us that the image of the Sun that we see is inverted.

Slide 4:

Now that you have a safe way to view the sun, you'll be able to view the next solar eclipse! This is what a projection of the sun looks like through a pinhole during a solar eclipse.

Slide 5:

This is the Leviathan telescope in Birr, Co Offaly. It is a big old telescope that was built nearly 200 years ago, but it uses the same principles of science that our sun viewer does. The light comes in this big open hole at the top of the telescope and hits the back of the telescope, just like our light hits a screen. In the telescope, however, there is a curved, concave mirror at the back that the light hits. Do you know what happens when light hits a concave mirror?

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This ray diagram shows us that when light hits a concave mirror, it is reflected back at an angle that projects the image onto a point.

Slide 7:

So if there's a concave mirror back here, where will the light be reflected?

Slide 8:

This is a cross section diagram of the telescope. The light comes into the telescope from the right, hits the concave mirror at the back on the left here, and is reflected back into the telescope. There is another mirror in the middle of the telescope, however. The light hits this

mirror and gets pointed out to the side. This is where an observer would look in to see the light.

Slide 9:

In this diagram, we can see again why the image we get is inverted. Follow the light rays from the top arrow to the mirror and then the reflection. You can see that the arrow will be flipped by the reflection.

Slide 10:

You might have seen this effect before yourself! Have you ever looked at your reflection in a spoon? (Demonstrate or pass around a spoon) You can see that your face is flipped upside down in the spoon, which is a concave mirror! This is just like what happens in the Leviathan telescope!

Slide 11:

This optical science is used in cameras as well as telescopes. Old fashioned cameras like this one were called pinhole cameras because they had a small pinhole that let in light. This light was captured to take a picture! The picture of the tree here would need to be turned upside down of course to see it properly!