

# Catching a Ray

*How To Catch A Ray Of Light In A Tube*



## Materials:

- 3 clear glass microscope slides
- Electrical tape

## Purpose:

Help students gain an understanding of the movement of light

## Problem

Can you catch a ray of light in a tube?

## Hypothesis

Students should respond to the problem question here, answering why and giving a reason for their answer.

## Procedure

1. Put a 20 cm piece of electrical tape sticky side up on your desk
2. Place a microscope slide on the tape so that the left edge of the tape lines up with the top and left side of the slide.
3. Place a second slide next to the first so that the top edge of the slide lines up with the top edge of the tape and the left side of the slide lines up with the right side of the first slide.
4. Place a third slide next to the second slide so that the top edge of the slide lines up with the top edge of the tape and the left side of the slide lines up with the right side of the second slide. Your model should look like this:



5. Pull the first and third slide up to create a prism
6. Wrap the tape around the prism so that the slides are completely covered.
7. Hold the prism up to your eye and look inside.

## What's Happening

What you have done is caught a ray of light in your tube.

When you look into the tube you see what seems to be several images. Actually, there is only one image.

Light can do four different things:

- It can transmit – go right through, like it does to the microscope slides
- It can absorb – get sucked in, like it does with the electrical tape
- It can reflect – bounce back at you, like it does with a mirror
- It can refract – bend and bounce, like it does in a rainbow

In order for you to see anything light has to bounce off an object and go into your eye.

Light enters your prism on an angle. It wants to transmit through the microscope slide, but it can't because the electrical tape is in the way.

The electrical tape wants to absorb the light, but it can't because the microscope slide is in the way, so it reflects in a straight line to the other side of your prism.

It hits the slide again and wants to transmit but can't because the electrical tape is there. The tape wants to absorb the light but can't because the slide is in the way, so it reflects again straight across to the other side of your prism.

It hits the slide again and wants to transmit, but can't because of the tape; tape wants to absorb but can't because of the slide so it reflects again to the other side of the prism.

If you look at the images inside your prism, you will discover that there are not several images in there, but the same image repeated over and over again at different angles. You have caught a ray of light in your tube!

