

At Home “Hologram”

Use a science trick called a ‘reflection illusion’ to make a mini 3D projector using a smartphone.

A hologram is a three-dimensional picture made of light. If you walk around a hologram, it looks like a real, solid object floating in mid-air. You can see it from the front, sides, and even look around it!

To make a hologram, scientists use lasers. A special mirror splits one laser into two separate paths. One laser shines onto the object. Another shines onto the camera film without hitting the object. When these two beams meet up again on the film, they crash into each other like ripples on a pond. It doesn't look like anything at first, but when you shine a bright light through that pattern, the light bends and recreates the exact shape of the object. Your eyes see the light and trick your brain into thinking the real object is floating right in front of you.

What You’ll Need

- Clear, clean plastic from a soda bottle or plastic packaging
- A pen, a ruler, and scissors
- Clear tape
- A smartphone



What You'll Do

- (1) Use your ruler and pen to draw a shape called a trapezoid on your plastic. It should look like a triangle with the top point chopped off. Make the top edge about half an inch wide, the height one and a half inches tall, and the bottom edge two and a half inches wide. Cut it out and use it as a pattern to cut out four identical pieces.
- (2) Tape the pieces together. Line up the edges side-by-side. Use small pieces of clear tape to connect them. When you tape the final two edges together, it will form a little plastic funnel or an upside-down pyramid.
- (3) Grab your phone and use our QR code to pull up the video. Or search YouTube for "4-way hologram video" or "pyramid hologram video." The videos should have a black screen and four tiny objects moving around in a cross shape.



3D video QR code

- (4) Turn off all the lights in the room to make it super dark. Put your phone flat on the table and press play. Place the small opening of your plastic pyramid right in the dead center of the four moving pictures.
- (5) Look through the side of the plastic pyramid, keeping your eyes level with the screen. The light from the phone bounces off the clear walls and meets in the middle, making the image float right inside your plastic pyramid!

