

**Title:**

# Hologram Building

## Workshop Overview

**Description:** Make a simple take-home hologram!

**Topic Area(s):** Computer Science, Engineering

**Grade Level:** 4-12

**Duration:** 20 min

### Learning Outcomes:

- What is a hologram?

## Background Information

Typically, a hologram is a photographic recording of a light field, rather than of an image formed by a lens, and it is used to display a fully three-dimensional image of the holographed subject, which is seen without the aid of special glasses or other intermediate optics. The hologram itself is not an image and it is usually unintelligible when viewed under diffuse ambient light. It is an encoding of the light field as an interference pattern of seemingly random variations in the opacity, density, or surface profile of the photographic medium. When suitably lit, the interference pattern diffracts the light into a reproduction of the original light field and the objects that were in it appear to still be there, exhibiting visual depth cues such as parallax and perspective that change realistically with any change in the relative position of the observer.

The small hologram we're building today is a four sided trapezoid case. All four sides refract the light from the video constructing a common 3-D image.

## Materials

- clear plastic cups **OR** clear plastic plates (plates are better)
- scissors
- ruler
- sharpie
- clear tape
- Phone (to play a video on)

## Safety Considerations

Careful with cutting! Supervise the kids when they are using scissors.

## Procedure

- **WITH PLASTIC PLATES:**
- Make four trapezoids and cut them out.
- The base of the trapezoid is 6cm (long side)
- The top of the trapezoid is 1 cm (short side)
- The height of the trapezoid is 3.5 cm.
- Tape them together and form this structure below:



- **WITH PLASTIC CUPS:**
  - Cut the plastic cups in half
  - Cut the small bottom of the cup
  - MAKE SURE IT IS FLAT (thus bend and fold it)
  - Then repeat the cuts for the trapezoids!
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- Then search up on YouTube a hologram video: “hologram videos” also link in the additional resources
  - Put your hologram structure on the screen like picture above.
  - Turn on full brightness...enjoy! (turn off the lights for best effect)

## **Wrap-Up/Debrief**

Do you ever see holographic images in your day to day lives? (magazine/book covers, on security tags on clothing, on credit cards and money)

## **Additional Resources**

<https://youtu.be/Y60mfBvXCj8>

<http://www.holoworld.com/holo/kids.html>