girl scouts of california's central coast

How to Build a 3D Hologram Projector

This is a fun and easy STEM activity for girls at any level. When you have completed your hologram projector, share your experience with your Girl Scout friends. Send a photo or video of your projector to media@girlscoutsccc.org

The 3D Hologram Projector is a physical object that uses principles of reflection, refraction and diffraction to form a 3D image in midair.

Definitions:

- Reflection - The return of light or sound waves from a surface
- Refraction – The change in direction of a sound or light wave, caused by the change in the wave's speed
- Diffraction – When sound and light waves bend around small obstacles or when waves spread out after they pass through small openings

Materials

- Transparent stiff plastic sheet
- Permanent marker
- Clear tape
- Ruler with centimeters on one side
- Scissors
- Graph paper
- Cell phone or tablet

Program Outline

Activity 1 – Watch video & Review Photos

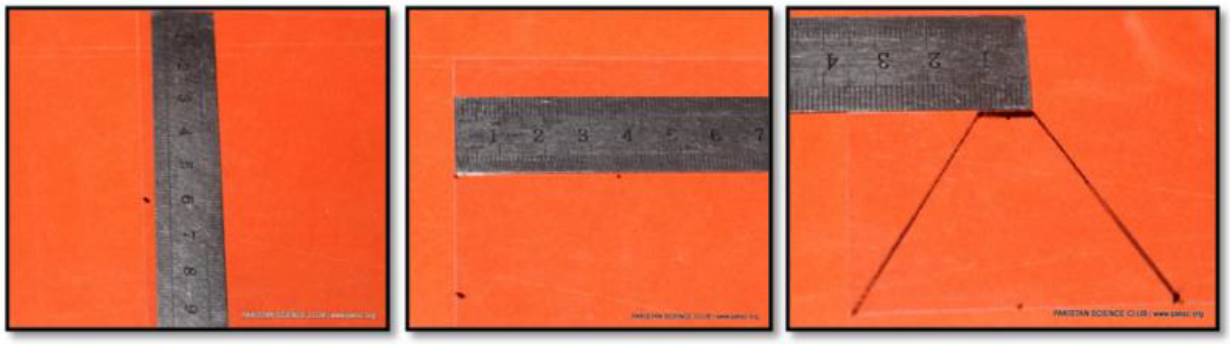
- Make a Hologram with your Phone

Activity 2 – Build your Hologram Projector

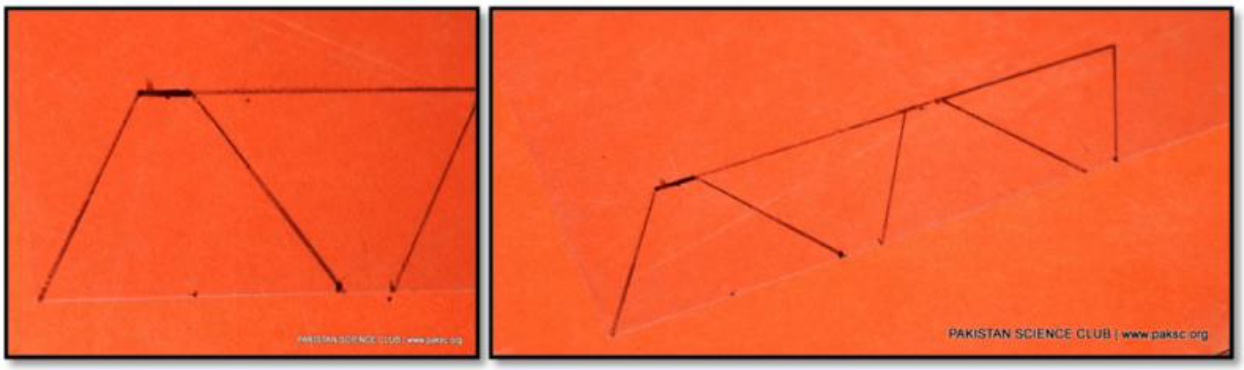
- Using graph paper and a marker draw the shape on paper. The parallel sides are 1 cm and 6 cm respectively and the height is 3.5 cm.
  Use your drawing as a pattern to draw four of the shapes on your plastic sheet.
- Cut out shapes with scissors.
- Join shapes side by side with their non-parallel sides using tape to secure them to each other.
- The hologram is ready! Use this holographic video, Video for Hologram Projector and enjoy 3-D image formation.

Note: Watch the video again if these directions are confusing.

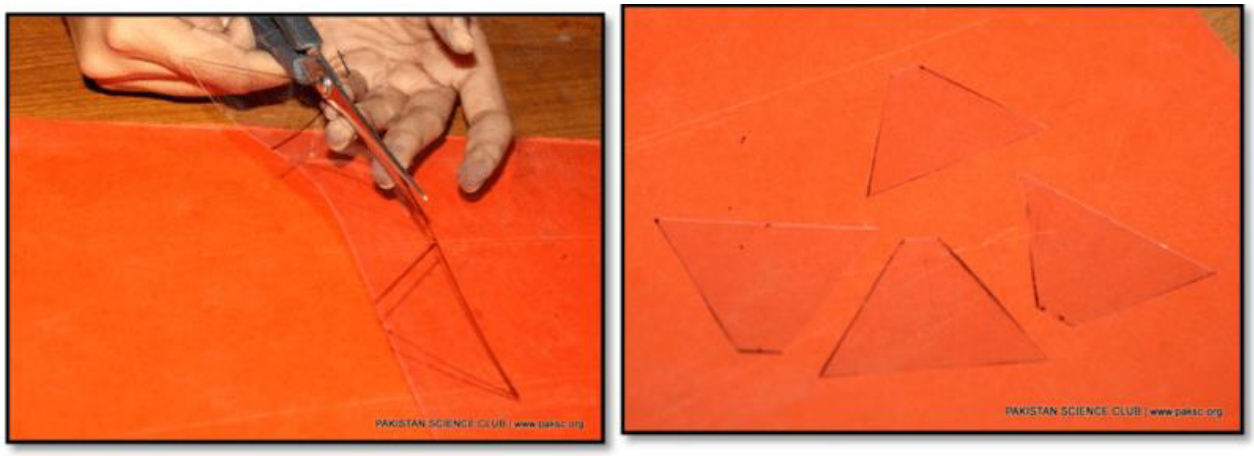
STEP 1



STEP 2



STEP 3



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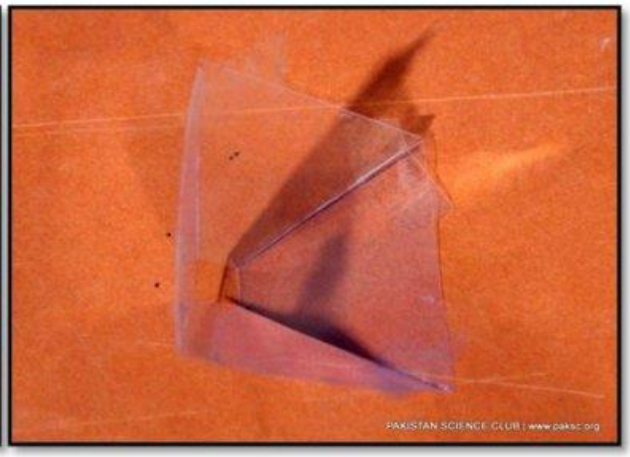

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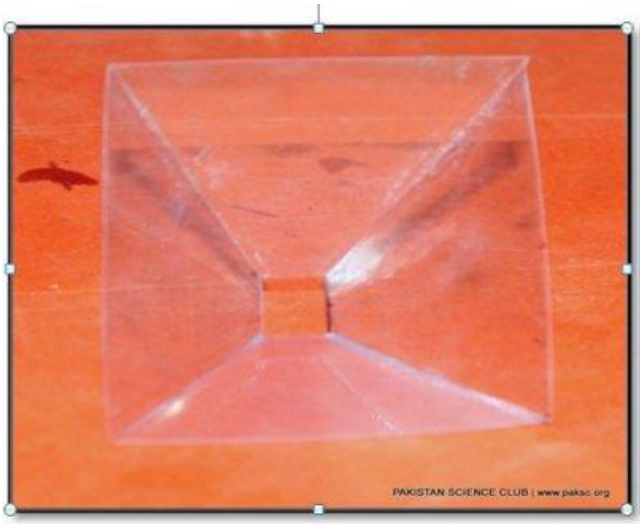

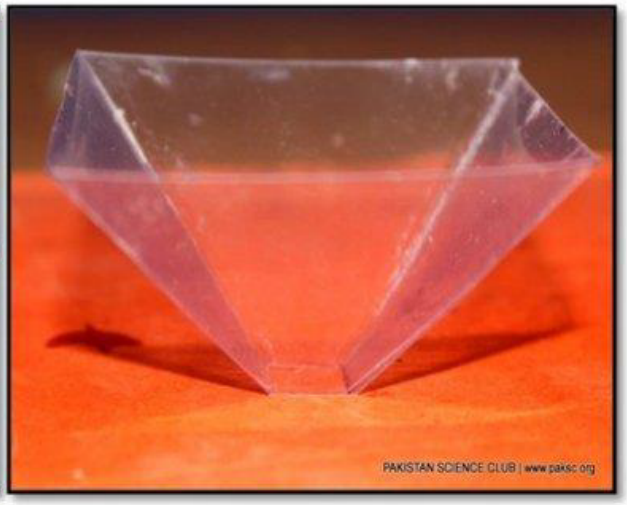

STEP 6