Mirror (Reflective) Drawing: Using mirror to complete a picture.

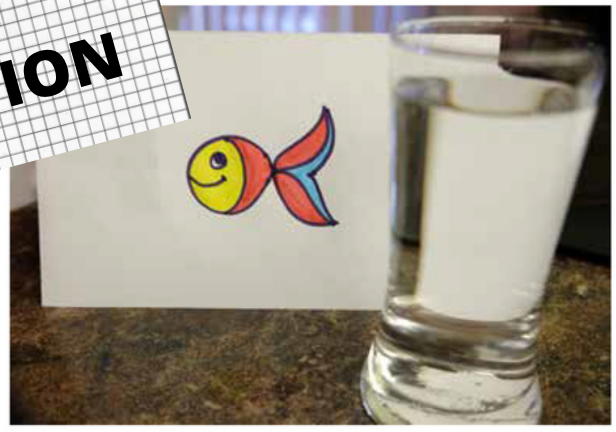
EXPERIMENT ON REFLECTION

CHALLENGE:

Use imagination to draw half of any object, then mirror it to complete.
Draw half of any object here. It can be a shape, face, animal, plant or anything which has symmetry.

EXPERIMENT ON REFRACTION

MATERIALS:
glass of water
paper (or paper napkin works if you're at a restaurant)
pen



INSTRUCTIONS:

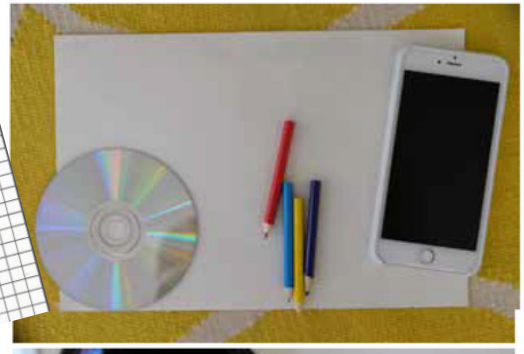
1. Draw a fish on the paper with eyes looking towards the left.

2. Take a glass of water and look through the glass. Which way does the fish seem to look now?

3. Get creative and check how reflection of light changes the direction of the eyes. Try out different patterns, shapes of glass and distance from the image to learn more.

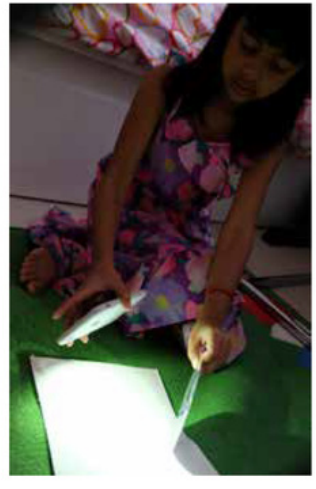
4. You can also try putting a stick in a glass of water. Does it appear bent?

EXPERIMENT ON DISPERSION



MATERIALS:

1 Sheet of paper or index cards
1 DVD Disc
1 Smart phone with torch
some crayons or Color pencils
A dark place



INSTRUCTIONS:

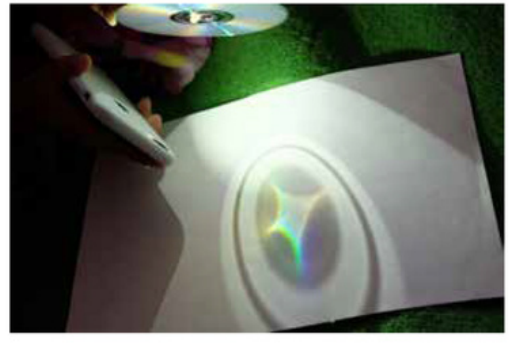
1. Set up a semi-lit or dark room, so that the light beams can be seen clearly. Take the paper and put it on the floor.

2. Now take the DVD disc and switch on the torch light in the smart phone.

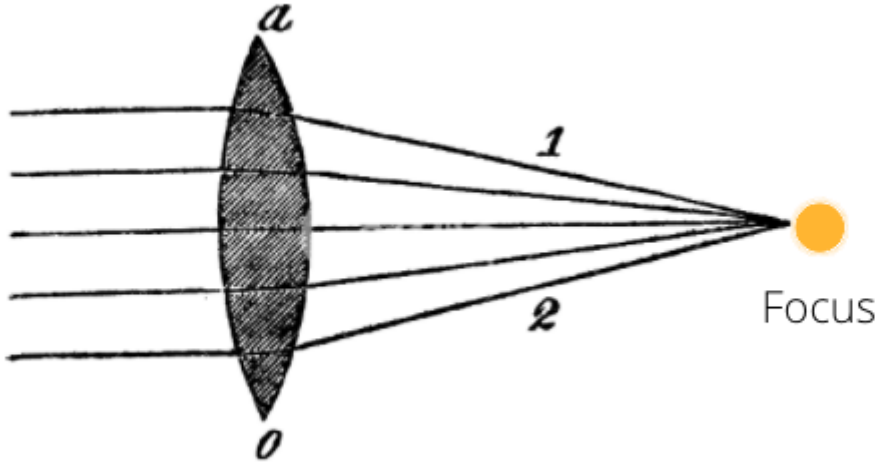
3. Shine the light against the disc.

4. Place the disc and paper in such a way so that the paper catches the reflected light from the disc.

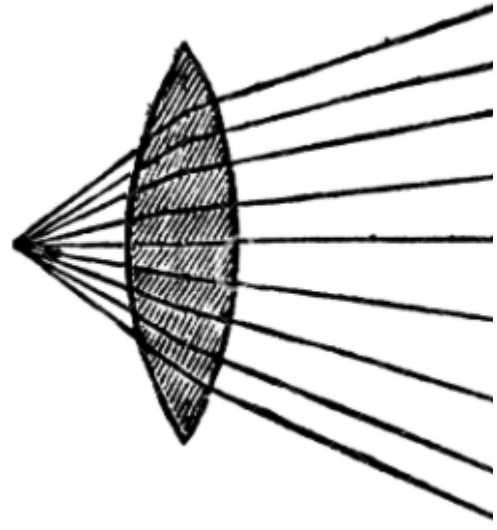
5. Use markers to color the seperate beams of white light. Do you see different colors? Where did they come from?



Light on Convex or Concave lens



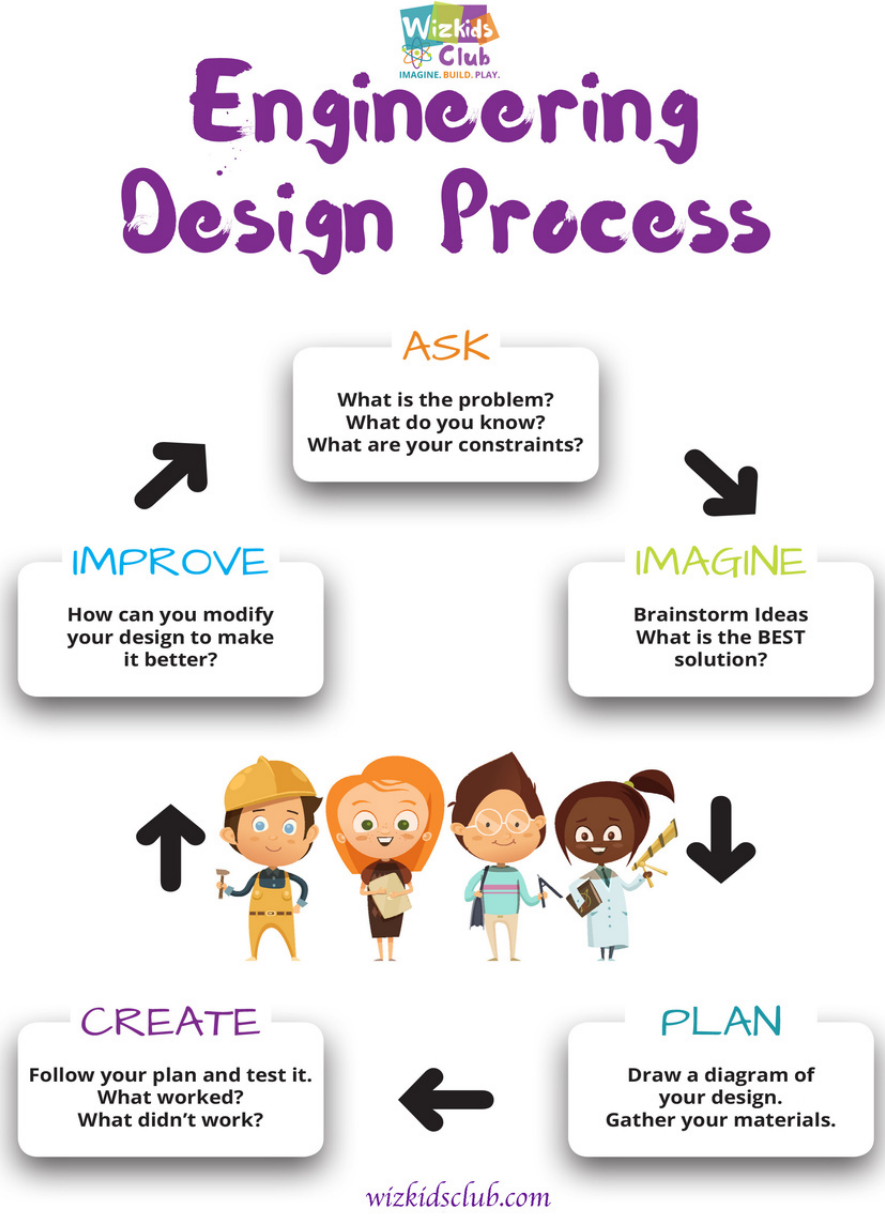
Convex lens converges rays of light



Concave lens diverges light beams

Introduction to the CHALLENGE (10 mins)
Use lens to build a Shoe-Box Projector

Use the engineering design prompt to come up with an invention of your own



Brainstorm and design (10 mins)

What kind of projector can you make with a shoe box and smart phone?
What lens do you need? Concave or Convex?
Sketch below your idea.

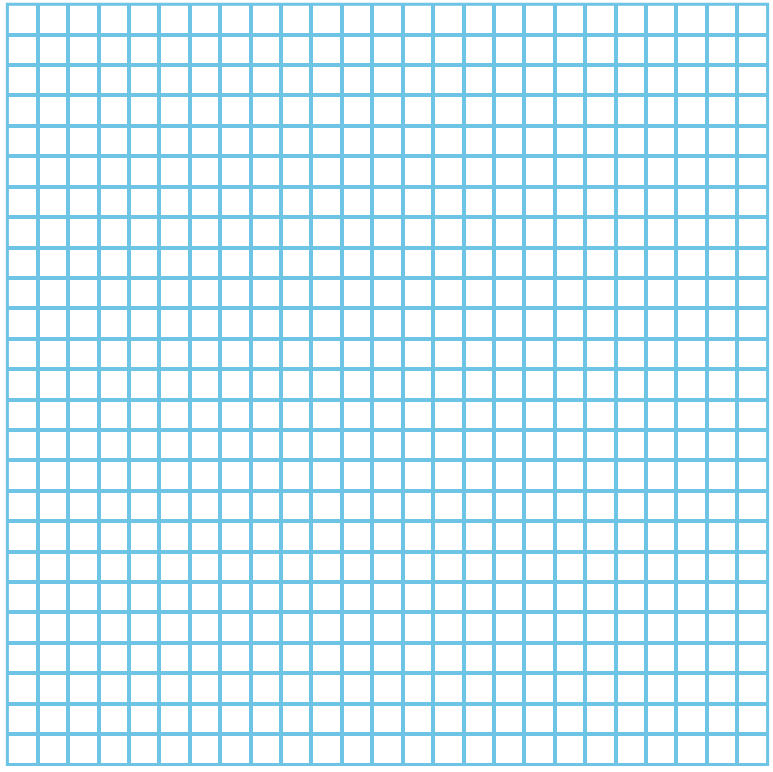
Build, test, evaluate and redesign (30 mins)

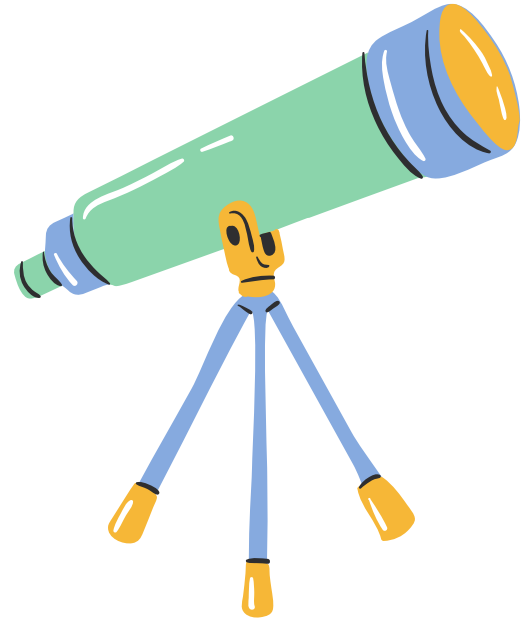
Discuss what happened (5 MINS)

Challenge extension:

Build a simple telescope! How will the lenses work?

Sketch it here





Refer: https://www.nasa.gov/audience/foreducators/informal/features/F_Build_a_Telescope.html