Guide to the Stations

Pay attention to the directions provided by your teacher. Stay in your assigned station and on task.

Station 1: Reflection Hologram Station

1. Place the phone horizontally under the acetate sheet.
2. Play the hologram video.
3. Stand in front of the acetate and look directly at it.
4. Observe the reflected image appearing to “float” above the phone.

Questions

1. What would happen if the acetate were placed at a different angle?

2. Why does the illusion disappear if the phone background isn’t black?

3. In what technologies might reflection on transparent surfaces be useful?

Station 2: Refraction of Light (Disappearing Test Tube)

1. Place the empty test tube in the beaker of water; observe distortion.
2. Place the water-filled tube in the beaker; observe reduced distortion.
3. Place the glycerin-filled tube in the beaker; observe near invisibility

Questions

1. Why does the test tube appear distorted in water but not in glycerin?

2. What does this show about how light transmits through materials?

3. How might this principle be used in camouflage or technology?

Station 3: Decomposition of Light (CD Diffraction)

1. Shine the light source onto the CD surface.
2. Observe the rainbow colors reflecting at different angles.
3. Record which colors appear first and last as the angle changes.

Questions

- How does the CD act like a prism?

- Why do different colors appear at different angles?

- How does this experiment model the transmission of light waves?

Station 4: Total Internal Reflection (Optical Fiber Model)

1. Shine the laser pointer into one end of the oil-filled tube.
2. Observe how the light beam travels through the tube.
3. Note that the light bounces inside without escaping.

Questions

- Why doesn't the light escape the test tube?

- How is this experiment an example of transmission AND reflection?

- Where do we use this phenomenon in technology?

Station 5: Polarization of Light

1. Look at the image through one polarizing disc.
2. Place the second disc in front and slowly rotate it.
3. Observe changes in brightness and colors as light is filtered.

Questions

- What happens to light as you rotate the second polarizer?

- How does this show absorption and transmission of light waves?

- Where do we use polarization in everyday life? (sunglasses, LCD screens).