DISAPPEARING GLASS EXPERIMENT

MATERIALS:

2 Tall Clear Glasses	Pyrex Glass Test Tubes
Water	Plastic Test Tubes
Vegetable Oil	Pencil
Penny	Paper Towels

VOCABULARY:

Refraction	Reflection	Light
Visible Light	Speed	Bend
Refraction Index		

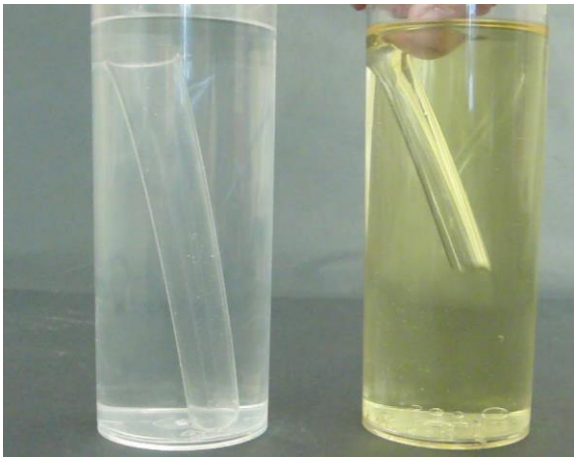
DIRECTIONS:

1. Fill one glass with water.
2. Fill the second glass with vegetable oil.
3. Submerge a glass test tube in the glass of water without filling the test tube with water. Observe. You should be able to clearly see the test tube.
4. Now let the test tube fill with water. Observe. You should still be able to see the test tube but it should be a little harder to see it.
5. Submerge a new glass test tube in the glass of oil without filling the test tube with oil. Observe. You should be able to clearly see the test tube.
6. Now let the test tube fill with oil. Observe. It should look like the test tube disappears.

THE STEAM BEHIND THE EXPERIMENT:

Glass objects are visible because they reflect some of the light that shines on them and bend of refract the light that shines through them.. If you eliminate reflection from and refraction by a glass object, you can make the object seem to disappear.

The Pyrex test tube completely disappears in vegetable oil because Pyrex and vegetable oil have the same refractive index (n = 1.47). The Pyrex test tube does not completely disappear in water because water has a different refractive index (n = 1.33). Ordinary glass or plastic will not disappear in vegetable oil because they have a different refractive index than vegetable oil and water.



More in depth explanation: You see a glass object because it both reflects and refracts light. When light traveling through air encounters a glass surface at an angle, some of the light reflects. The rest of the light keeps going, but it bends or refracts as it moves from the air to the glass. When light passes from air into glass, it slows down. It's this change in speed that causes the light to reflect and refract as it moves from one clear material (air) to another (glass). Every material has an index of refraction that is linked to the speed of light in the material. The higher a material's index of refraction, the slower light travels in that material. The smaller the difference in the speed between the two clear materials, the less reflection will occur at the boundary and the less refraction will occur for the transmitted light. If a transparent object is surrounded by another material that has the same index of refraction, then the speed of light will not change as it enters the object. No reflection and no refraction will take place, and the object will be invisible.

MAKE IT AWESOME:

Try the experiment again with the plastic test tube. Is it easier or harder to see the tube in the water and vegetable oil. Try using other glass objects like marbles, stirring rods, measuring cups, etc.

EXTENSIONS:

1. What happens when you fill the test tubes with water and place them in the oil?
2. What happens when you fill a glass half full of water and half full of vegetable oil and repeat the experiment?
3. What other changes can you come up with for this experiment?

WEBSITES AND VIDEOS:

1. Make a Penny Disappear: https://www.science-sparks.com/disappearing-coin-trick/
2. Make Arrows Change Direction: https://www.science-sparks.com/light-refraction-experiment/
3. Bend a Pencil in Water: https://raisinglifelonglearners.com/bending-pencil-science/

CONNECTWITH US ON SOCIAL MEDIA:

Scan QR code to follow account TikTok

@SCIENCEISFORGIRLS

@MakeBakeandDestroy

Etsy @MakeBakeandDestroy

(239)406-3243 **MakeBakeandDestroy@gmail.com** **www.MakeBakeandDestroy.com**