

# Magic Lesson 3: Disappearing Penny

*Here's another effect that uses light and water to produce a mind-boggling effect.*

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## Materials

Quart (liter) jar with lid, tap water, penny, helper

## The Setup

- 1 Fill the jar with tap water. Put the lid on the jar.
- 2 Place the jar and penny on the table in front of you.

## Magic Science Time!

- 1 Get a helper from the audience to assist you.
- 2 Have your helper examine the penny and confirm that it's a real penny.
- 3 Have the helper place the penny on the table. Ask "Can you see it?"
- 4 Place the jar filled with water on top of the penny.
- 5 Say a few magic words and wave your hands over top of the jar.
- 6 Have the helper look through the water from the side of the jar and see if the penny is there or gone. What is the answer?



## Discussion

- Where did the penny go?
- Why can't the helper see the penny through the clear water?

## Explanation

When light travels from air to water, light bends toward the normal, a line perpendicular to the surface. Traveling from water to air, light bends in the opposite direction, away from the normal.

This trick works because at a certain angle, when light travels from a more dense substance (water), to a less dense substance (air), it no longer refracts but will reflect.

Reflection is the bouncing back of light from a surface. When the image of the penny comes toward the side surface of the jar at too great an angle, reflection rather than refraction occurs, and the image cannot be seen outside of the jar.