

# STEAM in the Classroom

SCIENCE-TECHNOLOGY-ENGINEERING-AGRICULTURE-ART-MATH

## PENCIL MAGIC

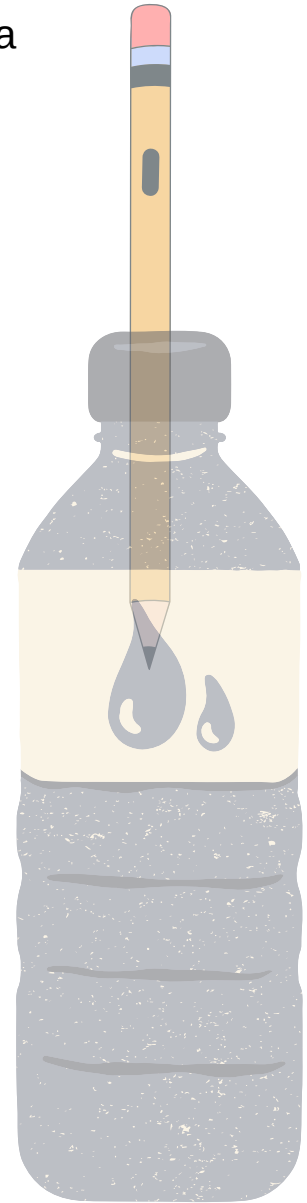
March 30 is National Pencil Day. In 1858, Hymen Lipman received a patent for attaching an eraser onto the end of a pencil. This made each item more convenient to use. During World War II, pencils with a hollow middle were used to hide miniature maps and compasses to use to escape if needed. Pencils are also used to express creativity through writing and drawing.

### For these activities you will need:

- pencils
- empty water bottle
- rice or other small filler item
- drinking glass
- water
- funnel
- imagination

### Directions picking up a bottle with a pencil:

Use a funnel to fill the water bottle completely with rice. Carefully, push a pencil (unsharpened works best) down into the rice. Try to get it all the way to the bottom of the bottle. Wiggle the pencil back and forth if necessary. Then try lifting the bottle with the pencil. If it doesn't work, wiggle the pencil more and try again.



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For this optical illusion you will need:

- pencil
- glass of water

### Directions:

Fill a jar halfway with water. Ask a friend,

“Can you break a pencil without touching it?”

Let the friend experiment with trying to break the pencil using the glass, water, and pencils.

If your friend can't figure it out, show them how to place the pencil in the water and tilt the pencil and jar so that the pencil appears broken when you look at it from the side.

**\*\*The pencil looks broken thanks to light refraction.**

Light refraction happens when something causes the light waves to bend. Illustrate this principle by having your friend run their hands through the air. It's easy!

But running their hands through water is harder. Light travels faster through the air than water, just like your hand, which can cause image distortion and “breaks” the pencil.



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