JR-SCIENTISTS

MAGIC STAR

Is it magic or is it science? Either way this toothpick star STEM activity is sure to impress!

SUPPLIES

5 toothpicks
Small plate
Small bowl of water
Medicine dropper

INSTRUCTIONS:

STEP 1: Take the 5 toothpicks and bend them until they bend in half but be careful not to let them break fully apart.

STEP 2: Arrange the toothpicks so they create a closed star pattern as seen below.

STEP 3: Fill up the medicine dropper with water.

STEP 4: Slowly add drops of water to the center of the toothpicks and watch the star move!

THE SCIENCE

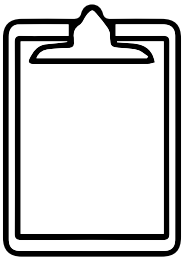
The toothpicks are made of dry wood. When water is placed in the middle of the closed star, the wood starts to absorb the water, which makes the wood expand. But how does the wood absorb water?

The adhesive forces between the water and the wooden toothpick are stronger than the cohesive forces inside the water itself. This adhesive force pulls the water molecules into the narrow spaces within the wood. This process is called capillary action. The result is that the water travels to the tips of the broken toothpicks.

As the wood absorbs more of the water, the bent wood fibers expand and straighten out. Then each toothpick pushes against the others. As the toothpicks straighten, the inside of the star opens up.

Magic Star Observations

Use this worksheet to process and evaluate your work.



RECORD

What did you observe?

Why do you think the toothpicks moved?

Would it matter what liquid the toothpicks were in? Why or why not?

What have I learned about capillary action?
