Water: The Most Amazing Substance

Simple STEM Activities You Can Do at Home

Purpose:	The purpose of this activity is for students to investigate the properties of water so as to better understand it's importance as a molecule.
Standard:	**S4E3. Obtain, evaluate, and communicate information to demonstrate the water cycle.** a. Plan and carry out investigations to observe the flow of energy in water as it changes states from solid (ice) to liquid (water) to gas (water vapor) and changes from gas to liquid to solid. b. Develop models to illustrate multiple pathways water may take during the water cycle (evaporation, condensation, and precipitation). **S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth processes.** b. Plan and carry out an investigation to illustrate the role of the sun's energy in atmospheric conditions that lead to the cycling of water.
Materials:	Mini-marshmallows or clay, toothpicks, dropper, water, cup, and penny.
Procedures:	How to do: 1. After learning about water, make a model of a water molecule using mini-marshmallows (or clay) and two toothpicks. 2. Color the hydrogen atoms and the oxygen atom so that you can tell them apart. 3. Predict how many drops of water will fit on the surface of a penny. 4. Using water, a dropper, and a penny, carefully add water a drop at a time to the surface of the penny. 5. Count how many drops of water you can add before it spills over. 6. Repeat this procedure to see if you can get more the second time. 7. Explain why so many drops of water were able to collect on the penny.
Science Behind It:	Water is the most amazing substance on the planet. A glass of water actually contains millions of tiny water molecules. Each water molecule contains two hydrogen atoms and one oxygen atom. You can make a model of a water molecule using two toothpicks and three marshmallows. Attach one marshmallow (oxygen) to the middle and two to the sides (hydrogen). The main reason that water is so amazing is that it dissolves things better than anything on the planet. Because of this, living things are made mostly of water – including humans. Water can dissolve and then transport tiny particles including nutrients (food) and oxygen quickly to parts of our body. This helps us to survive and thrive. Water molecules also stick to each other better than any other liquid on the whole planet. You can see how well water sticks together by counting how many drops of water can collect on a penny before it spills over. Overall, water is a pretty incredible substance.
Questions to Ask:	1. Describe why living things are made mostly of water. 2. Explain why so many drops of water are able to collect on a penny.