

GSGATL STEM Anywhere Activities

d, b, j, c, s, a

Activity 1: pH testing!

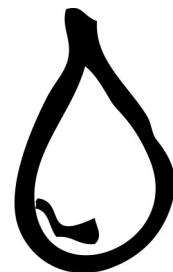
45 minutes

Materials needed:

- pH Strips (\$5, Amazon or major stores)
- Post it notes (\$1 major stores)
- Markers
- Butcher paper or printer paper
- Safe liquid household items (ex: dishsoap, apple juice, milk, vinegar, etc.)

Could apply to:

- The "S" in the GSGATL [STEM Patch](#).
- Brownie Home Scientist & Investigation Senses Badge
- Brownie WOW Journey
- Cadette Special Agent Badge
- Ambassador Water
- & more!



Time:	Activity:	Supplemental information
	<p>Pre-activities.</p> <ol style="list-style-type: none"> 1. Draw out a simple acid-base scale on butcher paper/a whiteboard. Add in 1-4 examples for younger girls (milk, citrus, water) 2. Collect samples of safe liquids (dishsoap, apple juice, orange juice, water, vinegar, soda, etc.) and place them in small Tupperware. Number the Tupperware and create a key for yourself. 	<p>0 1 2 3 4 5 6 7 8 9 10 11 12 13 14</p> <p>acidic neutral alkaline</p>
5 minutes	<ol style="list-style-type: none"> 1. Have the girls discuss the difference between acids and bases. Ask: <ul style="list-style-type: none"> • What is an acid? What is a base? Why is it important to know the difference? • Have them take some guesses as to what would be "acidic", "neutral", and "basic" • Explain the idea of more basic, more acidic. 	<ul style="list-style-type: none"> • Remember that another name for "base" is "basic" or "alkaline" • Water (pH 7) should be a good neutral example. • More acidic- closer to 1, more basic- closer to 14 • Ph stands for "power of hydrogen" • Extra lesson support here.
10 minutes	<ol style="list-style-type: none"> 1. Give the girls post-it notes (about 5) and markers. 2. Have them write out the last 5 things they ate/drank 3. Ask them to place their items where they believe they lie on the pH scale and discuss as a group. 	<ul style="list-style-type: none"> • 11 minute video about chemistry for older girls.
30 minutes	<ol style="list-style-type: none"> 1. Detective time! Let the girls safely use sight and smell to guess the substance, then guess the pH. 2. Next they can use the pH strips to test the household items and record the answer! 3. Reveal the answers after everyone has cast their votes and talk about how they came to the conclusions/ how they can continue to be pH scientists in the future! 	<ul style="list-style-type: none"> • Do the science sniff (a safe way to smell)! • Feel free to use the record sheet I created! • Let the girls debate for awhile if they received different answers.
Want more?	<ol style="list-style-type: none"> 1. Test out a stream or body of water nearby! If you can't test one, you can typically find the pH info of nearby waters online. 2. Talk about what makes it's way into waters (laundry detergent, waste, food, etc.) and how that can change pH and impact animals/plants. 3. What is acid rain? How does it happen? How can we 	<ul style="list-style-type: none"> • More info on acid rain here! • Look up pH of local GA waters here! • How pH of water varies across the US here.