STEM CONNECT

Acid & Bases

5th Grade | Activity 1

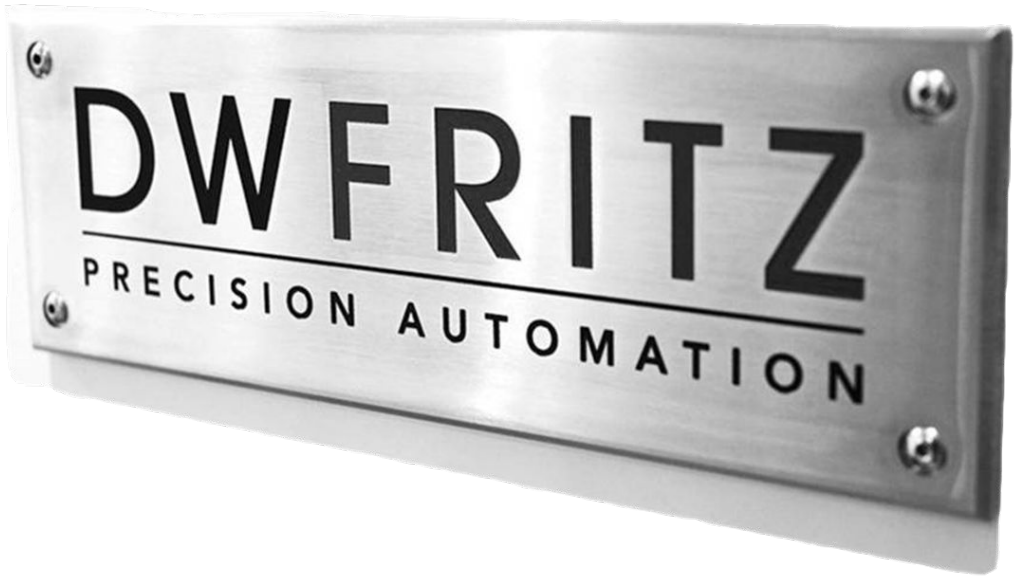
For today

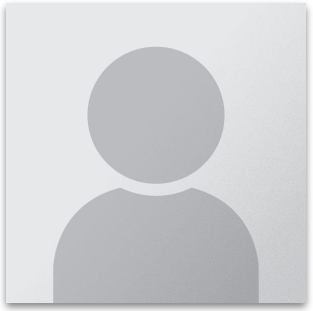
Introductions

Would You Rather

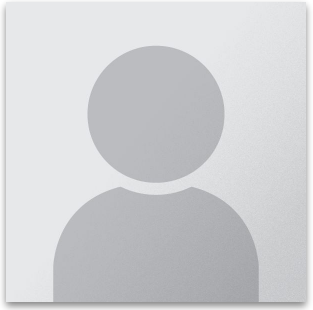
Acid & Bases experiment!

Greetings!





Owen Killingsworth
He/Him
Mechanical Engineer



Alisha Meyers
She/Her
Senior Spares & Service Specialist

Which would you rather have?

OR

Coca-Cola

Which water would you rather drink?

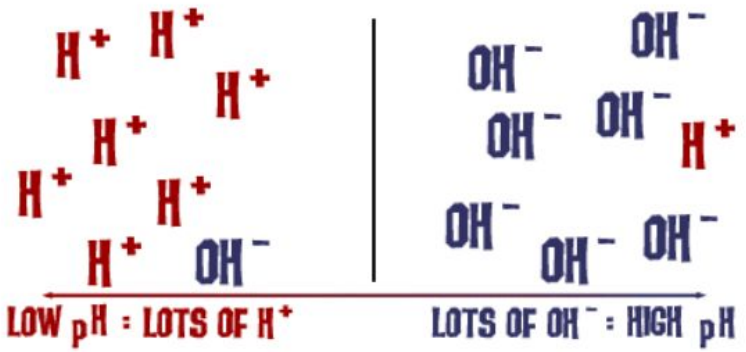
OR

How does water become unsafe?

What **corroded** the pipes?

What does **corrosive** mean?

ACIDS



BASES

source: Northern Arizona University

Examples

Examples

Properties

Tastes Sour Corrosive

Can cause stinging

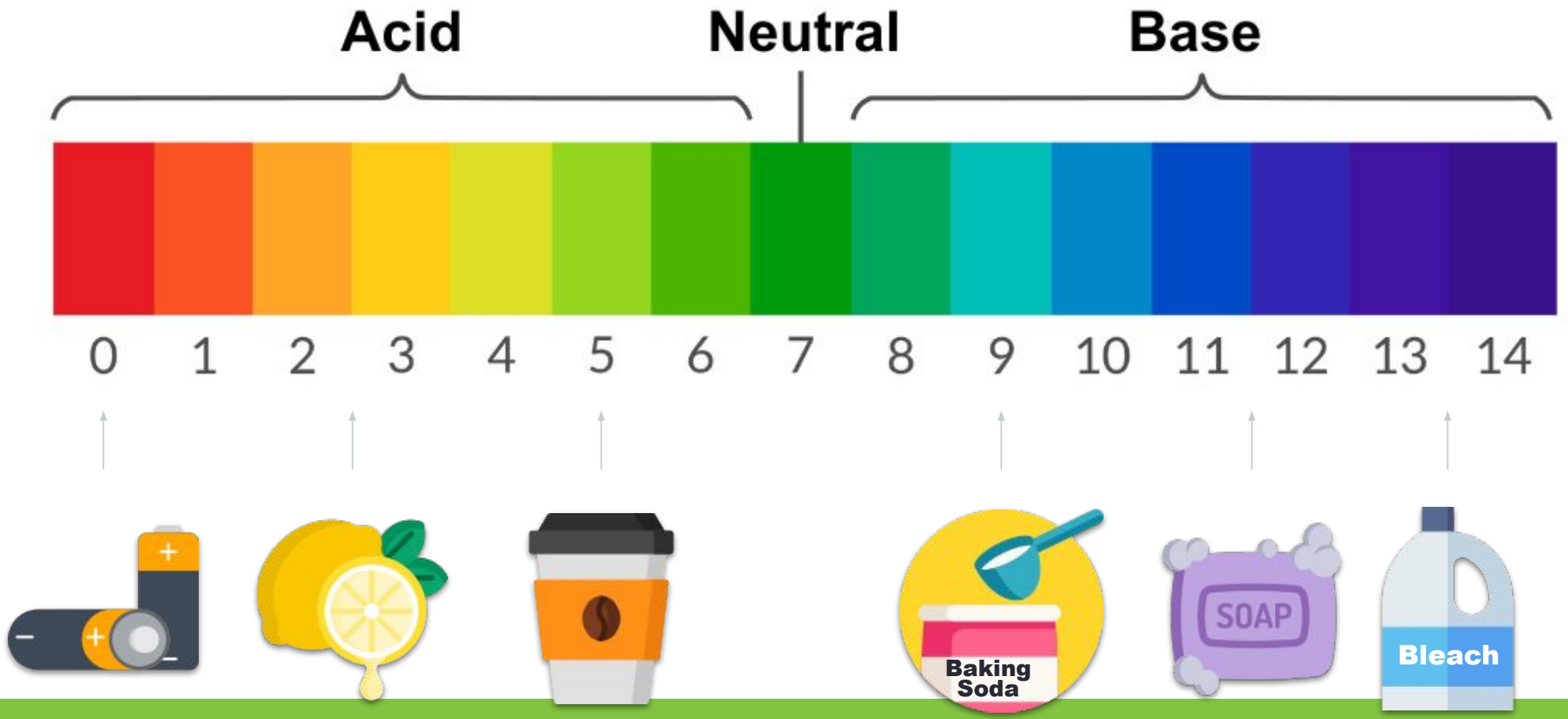
Properties

Tastes Bitter Slippery

Soapy Caustic (also can sting!)

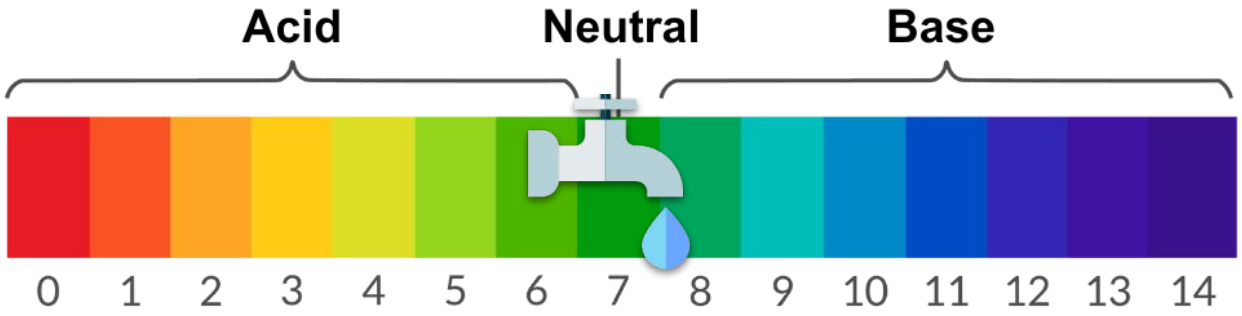
Using the pH Scale

We can measure the strength of an Acid or a Base using the pH Scale



What is the pH of **Water**?

The pH level of completely pure water is 7, which is exactly in the center of the scale, making it a neutral drink. However, most water includes particles that can raise the pH from 6.5 (**acidic**) to 8.5 (**basic or alkaline**).



What IS a Hypothesis?

A hypothesis is an educated guess.

Based on what you already know,

what do you think will happen when...

"If _____ happens,
then _____ will happen
Because _____"

[scientific method © stemsmartly]

Your Hypothesis

If pure water is combined with an **acid**, this mixture will have a pH of ___ (1-14) because _____

If pure water is combined with a **base**, this mixture will have a pH of ___ (1-14) because _____

If I mix the **acid water** and the **base water** together, the pH will be ___ (1-14) because _____

Write your predictions on your data sheet

Let’s experiment!

We’ll test our samples to see their pH levels and determine if they are an acid or a base

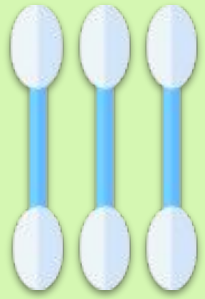
Before We Get Started…

Supplies

Safety Glasses

Test Tubes

pH Paper



Q-Tips

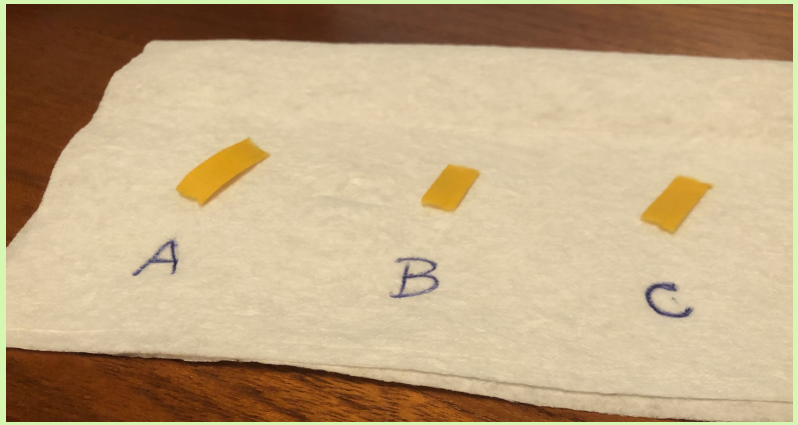
Safety

- Safety glasses must be worn **at all times**
- **Do not drink any water** from today's experiment

Set-up your supplies

Prepare pH paper

1. Write A, B, and C on your paper towel to mark your 3 trials
2. Tear your pH strip into 3 pieces
3. Place 1 piece at each label

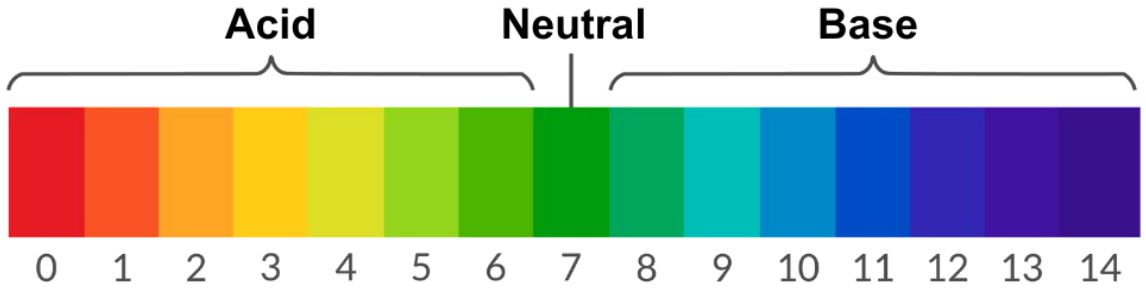


Fill test tubes

1. Use squeeze bottles with water
2. Add water (less than ½ full) to each test tube
3. Place the lid snug on the test tube

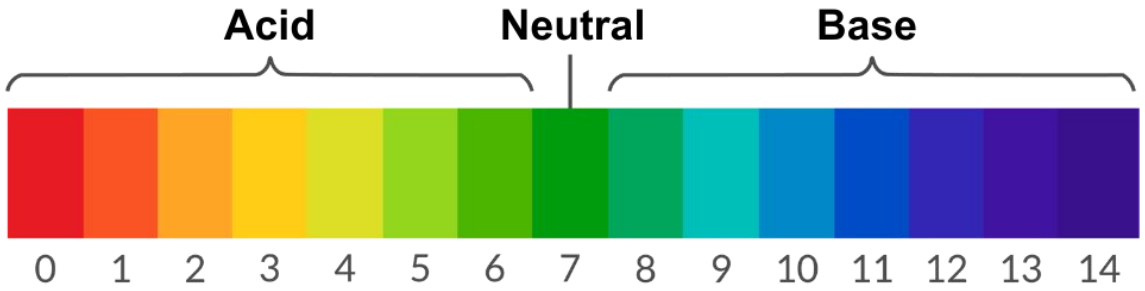
ACIDS

1. Shake **test tube "A"** to dissolve the citric acid
2. Dip a cotton swab in the liquid
3. Touch cotton swab to **pH test paper "A"**
4. Record your observations on your data sheet



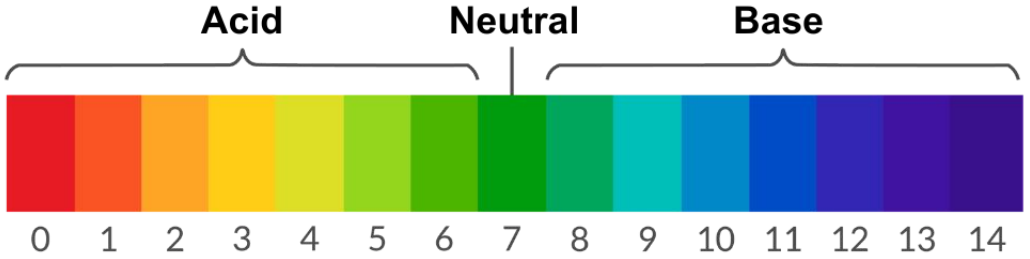
BASES

1. Shake **test tube "B"** to dissolve the washing soda
2. Dip a cotton swab in the liquid
3. Touch cotton swab to **pH test paper "B"**
4. Record your observations on your data sheet



MIXTURE

1. Pour both liquids into *one* test tube
2. Shake the test tube to combine the mixture
3. Dip a cotton swab in the liquid
4. Touch cotton swab to **pH test paper "C"**
5. Record your observations on your data sheet



Reflection

- What do you learn about acids and bases?
- What can happen to water in pipes?
- What did you find interesting or surprising?
- What do you still wonder…?

THIS IS PREVENTABLE!

Next time…

We will use your knowledge about acids bases to build our own water filtration system!