

## Identifying Acids & Bases Using Identifiers

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**ACIDS** are compounds with a chemical formula beginning in “H”

Ex) Hydrochloric acid: HCl

**BASES** are compounds with a chemical formula ending in “OH”. Basic compounds are also referred to as “alkaline”.

Ex) Sodium hydroxide: NaOH

**pH value** is a degree of acidity associated with a substance. This ranges from 1-14, with 1-3 identifying the strongest and most dangerous acids, 4-6 as weaker acids, 7 being neutral and relatively harmless substances, 8-11 indicating weaker bases, and 12-14 the stronger and more dangerous bases.

**pH indicator:** a (typically) colour-changing mixture that reacts with the acidity within a substance to cause a chemical change and indicate the pH level of the substance.

Ex) litmus, bromothymol blue, phenolphalein.

Today you will be testing the following nine household substances:

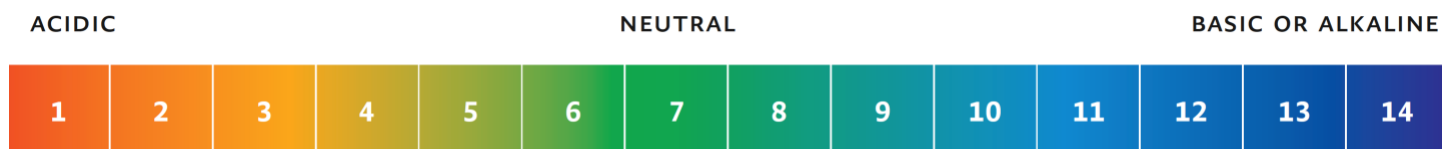
- Drain cleaner
- Bleach
- Lemon juice
- White vinegar
- Sugar (dissolved in water)
- Distilled water
- Baking soda (dissolved in water)
- Milk of Magnesia
- Soapy water (Dish soap)

### Safety Precautions:

**Please wear your safety goggles and gloves provided at all times when handling any substance. Exercise extra caution when handling isopropyl alcohol, drain cleaner, and bleach. If any substance should come in contact with your skin, rinse with warm water immediately. Do not mix any substances that you are not directly told to mix, as some mixtures may result in toxic fumes. DO NOT INGEST ANY SUBSTANCES.**

**Hypothesis:**

Before beginning the experiment, please discuss with your group if you believe each of these substances to be an acid, a base, or neutral. Next, sort each substance within the pH value line below:



**Experiment:**

Follow your teacher’s instructions carefully as you progress through the experiment. Fill out the following charts as you go.

**Litmus Paper Test**

SUBSTANCE	INDICATOR COLOUR AFTER CONTACT	ACID, BASE, or NEUTRAL?	ESTIMATED pH LEVEL USING COLOUR LEGEND
<b>Distilled Water</b>			
<b>Lemon Juice</b>			
<b>Drain Cleaner</b>			
<b>Bleach</b>			
<b>Baking Soda</b>			
<b>Sugar</b>			
<b>Milk of Magnesia</b>			
<b>Soapy Water</b>			
<b>White Vinegar</b>			

### Homemade Indicator Test

SUBSTANCE	INDICATOR COLOUR AFTER CONTACT	ACID, BASE, or NEUTRAL?	ESTIMATED pH LEVEL USING COLOUR LEGEND
Distilled Water			
Lemon Juice			
Drain Cleaner			
Bleach			
Baking Soda			
Sugar			
Milk of Magnesia			
Soapy Water			
White Vinegar			

### Mystery Substance

Substance	Litmus Paper Test			Homemade pH Indicator Test		
	Colour	A, B, or N	pH level	Colour	A, B, or N	pH level
Mystery Substance #						

Identity of the Mystery Substance: \_\_\_\_\_

- Which indicator was more effective in this experiment, the homemade indicator or litmus paper?

Explain your reasoning.

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## Conclusion

Upon completing the experiment, please record your results on the following pH value line. Sort all substances based on your findings, then compare to your hypothesis.

