

**LESSON**  
**17**

LAB

# Heartburn

## Acids and Bases

Name \_\_\_\_\_

Date \_\_\_\_\_ Period \_\_\_\_\_



### Purpose

To introduce a category of solutions called acids and bases.

### Safety Instructions



Acids and bases are corrosive. Do not get solutions on skin or eyes. In case of a spill, rinse thoroughly with water. Wear safety goggles.

### Part I: Testing Solutions

#### Procedure

1. Place four drops of each solution in an empty well of a well plate.
2. Add two drops of cabbage juice indicator to each solution. Record observations.
3. Empty your well plate into the waste container and rinse it in the sink.
4. Now test three to four drops of the same nine solutions with universal indicator. Record the color you observe and the number associated with the color.

**Classification Data Table**

Solution	Formula	Cabbage juice color	Universal indicator color	Indicator number
table salt (aq)	NaCl(aq)			
vinegar (aq)	C <sub>2</sub> H <sub>4</sub> O <sub>2</sub> (aq)			
rubbing alcohol (aq)	C <sub>3</sub> H <sub>8</sub> O(aq)			
window cleaner (aq)	NH <sub>4</sub> OH(aq)			
distilled water	H <sub>2</sub> O			
hydrochloric acid (aq)	HCl(aq)			
washing soda (aq)	Na <sub>2</sub> CO <sub>3</sub> (aq)			
lemon juice (aq)	C <sub>6</sub> H <sub>8</sub> O <sub>7</sub> (aq)			
drain cleaner (aq)	NaOH(aq)			

## Analysis

1. Group the substances based on their responses to the cabbage juice.
2. Place the nine substances on the number line below, based on the number associated with the color of the universal indicator.



3. Does the number line match the groupings you came up with in Question 1? Would you change your groups in any way?

## Part 2: Treating Indigestion

Calcium carbonate,  $\text{CaCO}_3$ , is a compound used to treat acid indigestion. It is found in over-the-counter antacid tablets.

### Procedure

1. On a separate sheet of paper, create a data table to record observations for each solution from Part I.
2. Place a small piece of calcium carbonate into nine wells of the well plate.
3. Add ten drops of each solution to each well. Record your observations.

### Analysis

1. What generalizations can you make about these solutions based on how they responded to calcium carbonate and how they responded to cabbage juice?
2. **Making Sense** What are four characteristics of the substances located on the left side of the number line? The right side of the number line?