

# Matter

## Its Properties & Its Changes

### **Investigation #1** – The Physical Side of Chemicals

#### **Gather These Things:**

Magnet  
Iron nail  
Sugar cube  
Copper penny  
Container of water  
A piece of paraffin  
Small amount of vegetable oil

### **Investigation #2** – Strange Substances and Their Properties

#### **Gather These Things:**

Cornstarch  
Quart-size zip bag  
Gallon-size zip bag  
Graduated cylinder (or pouring cup with metric units)  
Two baby diapers  
Small plastic bowl  
Metal spoon  
Large pan or sink  
Water

### **Investigation #3** – Chemistry Fun with Bubbles

#### **Gather These Things:**

Water  
Dishwashing Liquid  
Glycerin  
Bubble wands  
Large container with lid  
Small plastic container for bubble solution  
Straws

#### **Investigation #4 – Colors are Colors**

##### **Gather These Things:**

10-oz clear cups

Pencils

Distilled water

Thick, white coffee filters (cut into 2.5 X 13 cm strips)

Black, red, blue, and yellow colored markers (water soluble)

Scissors

Tape

#### **Investigation #5: - How in the World Can You Separate a Mixture of Sand and Salt?**

##### **Gather These Things:**

Funnel

Container

Magnifying glass

Coffee filter

Stir stick

Iron filings

Sand

Shallow glass container

Water

Salt

Scissors

#### **Investigation #6 – Water is the Standard**

##### **Gather These Things:**

Objects supplied by teacher

Graduated cylinder

String

Scissors

Rectangular wooden block

Small metric ruler

Cm<sup>3</sup> paper pattern (see back of the Student Answer Book)

Chart of densities (see Appendix)

Small English ruler

Rock

Water

Calculator

## **Investigation #7** – Bending Streams of Water

### **Gather These Things:**

Rubber balloons (rubber or plastic combs will also work)  
Bottles (that will form a stream of water)  
Paper (torn into small pieces)  
Piece of wool or fur  
String  
One-inch Styrofoam ball  
(Two) ½ inch Styrofoam balls  
Four toothpicks  
Pattern for tetrahedron (see back of Student Journal)  
Scissors

## **Investigation #8** – Drops of Water

### **Gather These Things:**

Waxed paper  
Medicine dropper  
Liquid soap  
Water  
Toothpick  
Graduated cylinder  
Pencil  
Measuring cup  
Penny

## **Investigation #9** – Oil and Water Don't Mix

### **Gather These Things:**

Vegetable oil  
Liquid soap  
Clear cup (#1)  
Water  
Stirring stick  
Sealed container (#2)  
Paper towels

## **Investigation #10 – Acids and Bases**

### **Gather These Things:**

Small pieces of grapefruit, lemons, oranges, or other citrus fruits  
Soaps  
Mild cleaners containing ammonium hydroxide  
Red and blue strips of litmus paper  
Detergents  
Water to drink

## **Investigation #11 – Basically – Is it Acid or Base?**

### **Gather These Things:**

Pen or pencil  
Safety glasses  
Labels  
Ten straws  
20 clear plastic cups (small)  
Red cabbage juice (purple cabbage)  
Chemicals listed on data table

## **Investigation #12 – Salt – An Ordinary Substance with Extraordinary Powers**

### **Gather These Things:**

Periodic Table of the Elements (see Appendix)  
Metal spoon  
Clear plastic cup  
Water  
Clear glass or plastic plate  
Magnifying lens  
Salt

### **Investigation #13 – More About the Amazing periodic Table**

#### **Gather These Things:**

Copy of the Periodic Table of the Elements (see Appendix)

### **Investigation #14 – Electricity and Salt Water**

#### **Gather These Things:**

Distilled water

Two test-tubes

Two insulated solid core wires with alligator clips on the ends

Epsom salt

Six-volt battery

600 mL glass beaker (or other wide-mouthed glass or plastic container)

### **Investigation #15 – Changes – Are they Chemical or Physical?**

#### **Gather These Things:**

Heating plate or other source of heat

Sugar

Magnifying lens

Six-volt battery

Metal pans

Heavy-duty aluminum foil

Safety glasses

Tongs

Cup

Metal spoon

## **Investigation #16 – Clues of a Chemical Reaction**

### **Gather These Things:**

Effervescent tablet  
Clear plastic cup  
Flexible straws  
Phenol Red  
Steel wool pad (plain without soap)  
Water, room temperature  
Water, hot  
Two transparent plastic cups with lids  
Dishwasher liquid  
Tape  
Vinegar  
Three tea bags  
Epsom salt

## **Investigation #17 – A Heavy Gas**

### **Gather These Things:**

Balloon (6-9 inches)  
Small candle in a heavy container  
Average to tall drinking glass  
Lighter or matches (an adult will need to do this)  
Empty two-liter plastic bottle  
Timer or watch with second hand  
String (about 0.5 meter)  
A deep bowl  
Vinegar  
Safety glasses  
Plastic funnel  
Baking soda  
Metric ruler

## **Investigation #18 – Large or Small? Hot or Cold?**

### **Gather These Things:**

Three clear cups  
Three halves of effervescent tablets  
Water at room temperature  
Hot water  
Ice water (with ice removed)  
Timer (or watch with second hand)

## **Investigation #19 – Understanding Phase Changes**

### **Gather These Things:**

Diagram of phases of water (see below and Student Journal page S40)

Patterns of water molecules (see back of Student Journal)

Scissors

Pencil

## **Investigation #20 – The Race to Evaporate**

### **Gather These Things:**

Glass eye dropper

Rubbing alcohol

Fingernail polish remover (with acetone)

Piece of paper with four circles

Water

Small piece of ice

Safety glasses

Timer (or watch with second hand)