

Materials at a Glance

Experiment 1	Experiment 3	Experiment 5	Experiment 6	Experiment 7
imagination	food labels, several periodic table of elements from <i>Student Textbook</i> resources (books or online)	baking soda lemon juice balsamic vinegar salt and water: 15-30 ml salt dissolved in 120 ml water (1-2 tbsp. salt dissolved in 1/2 cup of water)	one head of red cabbage distilled water, about 1 liter (1 quart) various solutions, such as: ammonia vinegar clear soda pop milk mineral water	red cabbage juice indicator (from Experiment 6) household ammonia vinegar large glass jar measuring spoons measuring cup household solutions chosen by students (to test for acidity and basicity)
Experiment 2	Optional computer with internet access	2 or more egg whites milk small jars, 7 or more measuring cups and spoons eye dropper Peanut Brittle (see next page—Foods) pan, buttered saucepan	large saucepan knife several small jars white coffee filters eyedropper measuring cup measuring spoons marking pen scissors ruler suggested natural materials (see next page)	
10 ml glass graduated cylinder glass eyedropper 60 ml (1/4 cup) water 60 ml (1/4 cup) rubbing alcohol 60 ml (1/4 cup) vegetable oil waterproofing substance, e.g., wax, Scotch-Gard additional water and vegetable oil (small amount) Optional disposable glass tube Goo Gone or similar cleaner	Experiment 4 colored marshmallows, 1 pkg small, 1 pkg large (or gumdrops and/or jellybeans) toothpicks, 1 box marking pen Optional food coloring			
Experiment 8	Experiment 9	Experiment 10	Experiment 11	Experiment 12
tincture of iodine [Iodine is VERY poisonous — DO NOT LET STUDENTS EAT any food items with iodine on them.] a variety of raw foods, including: pasta bread celery potato banana (ripe) and other fruits 1 unripe (green) banana liquid laundry starch (or equal parts borax and corn starch mixed in water) absorbent white paper eye dropper cookie sheet marking pen knife	about 120 ml (1/2 cup) each: water ammonia vegetable oil rubbing alcohol melted butter vinegar small jars (7 or more) food coloring (6 colors) dish soap, 30 ml (2 tbsp.) eyedropper measuring cup measuring spoons marking pen spoon ballpoint ink pens of various colors, including black (see bottom of next page)* rubbing alcohol coffee filters, several (white) cardboard shoebox (or similar size box) tape scissors ruler	1-2 brown paper bags cut into about 20 5 cm x 5 cm (2" x 2") squares wax paper, 8 pieces paper towels tape knife scissors ruler marker or pen foods: vegetable oil butter celery potatoes banana avocado lard margarine water orange cheese milk cream several food products labeled fat free and low fat	liquid laundry starch, 120 ml (1/2 cup); or 10 ml (2 tsp.) borax and 10 ml (2 tsp.) cornstarch Elmer's white glue, 60 ml (1/4 cup) Elmer's blue glue (or another different glue), 60 ml (1/4 cup) water 2 small jars marking pen that will write on glass Popsicle sticks for stirring measuring cup safety goggles rubber gloves apron 10 ml graduated cylinder beaker or glass jar glass stirring rod Nylon Synthesis and Rope Trick Kit from Home Science Tools**	tincture of iodine [VERY POISONOUS— DO NOT LET STUDENTS EAT] bread (1-2 slices) timer wax paper marking pen cup one raw egg one raw onion table salt clear liquid dish washing detergent rubbing alcohol (isopropanol, 70-90%) wooden stir stick or Q-tip coffee filter (any color) sieve 2 glass jars or large test tubes measuring cup and measuring spoons blender

**Nylon Synthesis and Rope Trick Kit from Home Science Tools: <http://www.hometrainingtools.com/>, Item # KT-ISNYLON

Materials

Quantities Needed for All Experiments

Equipment	Materials	Foods
apron beaker or glass jar blender cookie sheet cup eyedropper eyedropper, glass gloves, rubber goggles, safety graduated cylinder, glass, 10 ml jar, glass, 2, or large test tubes jar, large glass jar, small, 7 or more knife measuring cups measuring spoons pan rod, glass stirring ruler saucepan, large scissors sieve spoon timer Optional computer with internet access	alcohol, rubbing (isopropanol, 70-90%), at least 180 ml (3/4 cup) ammonia, household coffee filter (any color) coffee filter, white, several dish soap dish washing detergent, liquid, clear food coloring (6 colors) glue, Elmer's blue (or another glue different from white), 60 ml (1/4 cup) glue, Elmer's white, 60 ml (1/4 cup) iodine, tincture of [VERY poisonous: DO NOT LET STUDENTS EAT any food items with iodine on them] labels, food (student chosen), several Nylon Synthesis and Rope Trick Kit from Home Science Tools: http://www.hometrainingtools.com/Item#KT-ISNYLON paper, absorbent white paper bag, brown, 1-2 paper towels pen, marking pen, marking, that will write on glass pens, ballpoint ink of various colors, including black (see below)* Popsicle sticks for stirring shoebox, cardboard (or similar size box) solutions, household, chosen by students (to test for acidity and basicity) starch, liquid laundry (or equal parts borax and corn starch mixed in water) stick, wooden stir stick or Q-tip tape toothpicks, 1 box water, distilled, about 1 liter (1 quart) waterproofing substance, such as car wax, floor wax, silicone spray, or Scotch-Gard (small amount) wax paper Optional Goo Gone or similar cleaner tube, glass, disposable	baking soda banana, 2 unripe (green) bread (1-2 slices) butter, about 120 ml (1/2 cup) cabbage, red, 1 head cheese cream egg, one raw egg whites, 2 or more fat free food products, several lard lemon juice margarine marshmallows, colored, 1 pkg small, 1 pkg large (or gumdrops and/or jellybeans) milk mineral water onion, one raw peanut brittle ingredients 360 ml (1 1/2 cups) sugar 240 ml (1 cup) white corn syrup 120 ml (1/2 cup) water 360 ml (1 1/2 cups) raw peanuts (can be omitted) 5 ml (1 teaspoon) baking soda butter to grease pan raw foods, including: avocado banana (ripe) and other fruits bread celery orange pasta potato salt, 15-30 ml (1-2 tbsp.) or more soda pop, clear vegetable oil, about 180 ml (3/4 cup) vinegar vinegar, balsamic water
Other		
natural materials, (suggested) Exper. 6: poppyseed or cornflower petals; madder plant (Rubiaceae family); red beets; rose petals; berries; blue and red grapes; cherries; geranium petals; morning glory; red onion; petunia petals; hibiscus petals (or hibiscus tea); carrots; other strongly colored plant materials of students' choice periodic table of elements from <i>Student Textbook</i> resources (books or online)		

* Experiment 9—Pens: Regular Bic® or other brand ballpoint pens can be used in this experiment. Black, blue, red, and green will give enough colors to compare. Also, multicolored ballpoint pens work well. Try to find one with at least 7 or 8 different colors. Ballpoint pens work better than felt tip pens or markers. Buy inexpensive pens for this experiment because they will be taken apart.

Contents



Experiment 1	Learning to Argue Scientifically	1
Experiment 2	Reading the Meniscus	4
Experiment 3	What Is It Made Of?	8
Experiment 4	Modeling Molecules	13
Experiment 5	Identifying Chemical Reactions	17
Experiment 6	Making an Acid-Base Indicator	22
Experiment 7	Vinegar and Ammonia in Balance	27
Experiment 8	Show Me the Starch!	32
Experiment 9	Mix It Up!	35
Experiment 10	Testing for Lipids	41
Experiment 11	Goopy Glue	45
Experiment 12	Amylase Action	50