

Apologia Exploring Creation With Chemistry

2nd Edition

Schedule by Donna May

Adapted from a schedule by Sheri Neely, with Cheryl Randall's schedule format and Leah Mitchell's introduction
<http://apologia.donnayoung.org/schedule.htm>

The Schedule: This schedule lists all the possible reading assignments, questions, problems, tests, labs and extra labs (MicroChem Kit, see text page iv) for this course, as well as some optional web sites to visit. Students need to complete all the reading assignments, and it is highly recommended that they work all the problems, answer all the questions, and take all the tests.

Weekly lab time will be spent doing experiments, group activities, some CD and web site activities, and answering questions the students may have about the reading assignments, questions, or problems.

The following items are to be done outside of the lab classes. Students and parents can determine which of the following the students will do, and how they will do them (written or orally).

- On Your Own (OYO) questions
- Review Questions
- Practice Problems
- Extra Practice Problems (Appendix B) (optional)
- module tests
- quarterly tests

What to Bring to Each Class: Students should always bring the following to every class:

- Textbook
- Lab notebook
- Student's answers to questions, problems and tests
- Pencil
- Calculator
- Safety goggles
- Any extra supplies needed for the experiments

Lab Notebooks: Some suggestions for the lab notebook are: a 3-ring binder, spiral notebook, or a lab report form created on a computer and printed out. Students will write a lab report for each experiment they do, and each one should be on a separate sheet of paper. The name and number of the experiment should be at the top as the title of the page, and the date should also be written at the top. A section for 'Data' should be labeled. This is where the student will write down all the data that was compiled while completing the experiment. After this, a section entitled 'Summary' should be included. Here the student will write a brief summary of what was done and what he/she learned during the experiment.

Notes to Students and Parents:

- Students and/or parents should correct all of the questions, problems and tests, and incorrect answers should be corrected. If the student doesn't understand a problem, they can get help on-line at Apologia's site: www.highschoolscience.com, by phone or fax, or ask for help at the next lab time after the lab is completed. Extra help is also available at a special website described on page ii of the text.
- Also on the special website are errata notes that give corrections to errors in the text.
- Any information the students must memorize is centered and in boldface type in the text.
- Definitions also must be memorized.
- Any formulas that are used for exercises must be memorized for the tests.
- For the Examples, don't just read them, sit down with a pencil and paper and do them.

Notes to Teacher:

- There are 4 days of assignments each week; the 5th day is for lab.
- Recommended lab time is 90 minutes. Some take more and some take less time.
- Some labs have more experiments listed than can be done in the allotted time. You may omit some of the experiments.
- If the experiments for a lab period don't take the full time, you may use the time for viewing demonstrations and explanations on the companion CD, playing chemistry-related games (like Element-O), reviewing, supplementing with video tapes, adding other activities from the Internet or books, or going over On Your Own problems, Extra Practice Problems or test questions.
- The MicroChem Kit lists the module in which each of its experiment should be done. The Apologia text does not list all the experiments that the MicroChem list does. These 'extra' experiments are noted in the schedule below and may be omitted.
- The CD listed in the schedule is the companion CD for the Apologia chemistry text. The selections from the CD listed in the schedule below are ones that are entertaining or cover some of the more difficult material.
- The schedule is set up so that in most cases, by each lab period, the students should have read the material at least up to the experiments for that lab.
- Many experiments require a sink and/or stove (or other heat source), so these are not listed in the supplies list below.
- The assignment "Copy periodic chart," in week 5, comes from the last paragraph on page 74 of the text. Copying the chart makes it more convenient for the students to look up information on the chart.

Schedule

MODULE 1				
LAB 1	CD: Author's Introduction (3 min) Exp. 1.1 Air Has Mass p.1 Exp. 1.2 Air Takes Up Space p.2			
week 1	<input type="checkbox"/> Read i-iv & p.1-7	<input type="checkbox"/> Read p.7-16 <input type="checkbox"/> Do OYO 1.1-1.11	<input type="checkbox"/> Read p. 17-22 <input type="checkbox"/> Do OYO 1.12	<input type="checkbox"/> Read p. 23-30 <input type="checkbox"/> Do OYO 1.13-1.14
LAB 2	Exp. 1.3 Comparing Conversions to Measurements p.27 (sample calculations in Solutions Manual p. 22) Exp. 1.4 The Density of Liquids p.29 (sample calculations in Solutions Manual p. 23) CD: Mod 1: Gas density demonstration (2 min)			
week 2	<input type="checkbox"/> Read p. 30-31 <input type="checkbox"/> Do OYO 1.15-1.16 <input type="checkbox"/> Review Questions	<input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra Probs p.569 (opt.)	<input type="checkbox"/> Module 1 Test	<input type="checkbox"/> Read p.37-45
MODULE 2				
LAB 3	Exp. 2.1 Calibrating Your Thermometer p.43 Web: Significant Figures Fable: http://dbhs.wvusd.k12.ca.us/webdocs/SigFigs/SigFigsFable.html Powers of 10 Demonstration: http://micro.magnet.fsu.edu/primer/java/scienceopticsu/powersof10 CD: Mod 2: First Law of Thermodynamics Demonstration (3 min)			
week 3	<input type="checkbox"/> Read p.45-47 <input type="checkbox"/> Do OYO 2.1-2.3	<input type="checkbox"/> Read p.48-50 <input type="checkbox"/> Do OYO 2.4-2.5	<input type="checkbox"/> Read p.50-53 <input type="checkbox"/> Do OYO 2.6-2.7	<input type="checkbox"/> Read p.53-59
LAB 4	Exp. 2.2 Measuring the Specific Heat of a Metal p.58 (sample calculations in Solutions Manual p. 29)			
week 4	<input type="checkbox"/> Read p.59-60 <input type="checkbox"/> Do OYO 2.8-2.10 <input type="checkbox"/> Review Questions	<input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra Probs. p.570 (opt.)	<input type="checkbox"/> Module 2 Test	<input type="checkbox"/> Read p.69-72
MODULE 3				
LAB 5	Exp. 3.1 The Conservation of Mass p.71 CD: Periodic Table Song; also http://www.privatehand.com/flash/elements.html (2 min) Lyrics: http://chemlab.pc.maricopa.edu/periodic/lyrics.html			
week 5	<input type="checkbox"/> Read p.73-77 <input type="checkbox"/> Do OYO 3.1-3.4 <input type="checkbox"/> Copy periodic chart (opt)	<input type="checkbox"/> Read p.78-82 <input type="checkbox"/> Do OYO 3.5-3.6 <input type="checkbox"/> Memorize abbreviations for elements 1-20 p.568	<input type="checkbox"/> Read p.82-87 <input type="checkbox"/> Do OYO 3.7-3.8	<input type="checkbox"/> Read p.87-90 <input type="checkbox"/> Do OYO 3.9 <input type="checkbox"/> Read MicroChem Exp.3
LAB 6	Exp. 3.2 Electrical Conductivity of Compounds Dissolved in Water p.88 MicroChem Exp. 3 Electrical Conductivity of Several Solutions p. 8			
week 6	<input type="checkbox"/> Read p.90-93 <input type="checkbox"/> Do OYO 3.10-3.11 <input type="checkbox"/> Memorize prefixes p.91 <input type="checkbox"/> Start Review Questions	<input type="checkbox"/> Finish Review Questions <input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra Probs. p.571 (opt.)	<input type="checkbox"/> Module 3 Test <input type="checkbox"/> Read p.99-102	<input type="checkbox"/> Read p. 103-108 <input type="checkbox"/> Do OYO 4.1 <input type="checkbox"/> Read MicroChem Exp.1
MODULE 4				
LAB 7	Exp. 4.1 Separating a Mixture of Sand and Salt p.101 Exp. 4.2 Distinguishing Between Chemical & Physical Change p.107 For Exp.4.2 freeze graduated cylinder & soak egg in vinegar (alternate experiment) the day before MicroChem Exp. 1 Paper Chromatography p.1			
week 7	<input type="checkbox"/> Read p.109-113 <input type="checkbox"/> Do OYO 4.2-4.4	<input type="checkbox"/> Read p.113-117 <input type="checkbox"/> Do OYO 4.5	<input type="checkbox"/> Read p.117-120	<input type="checkbox"/> Read p.120-122 <input type="checkbox"/> Do OYO 4.6-4.7 <input type="checkbox"/> Re-read Exp. 4.3 & 4.4 <input type="checkbox"/> Read MicroChem Exp.2
LAB 8	Exp. 4.3 Condensing Steam in an Enclosed Vessel p.110 Alternates for Exp.4.3 are on the bookextras (pop cans) and highschoolscience (pop bottle) web sites Exp. 4.4 The Kinetic Theory of Matter p.113 MicroChem Exp. 2 Melting Points, Super Cooling p.5			
week 8	<input type="checkbox"/> Read p.122-125 <input type="checkbox"/> Do OYO 4.8-4.10 <input type="checkbox"/> Start Review Questions	<input type="checkbox"/> Finish Review Questions <input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra Probs. p.572 (opt.)	<input type="checkbox"/> Module 4 Test	<input type="checkbox"/> Quarterly Test #1 Solutions Manual p.203 <input type="checkbox"/> Read p. 133-137 <input type="checkbox"/> Do OYO 5.1-5.2 <input type="checkbox"/> Read MicroChem Exp.7
MODULE 5				
LAB 9	MicroChem Exp. 7 Decomposition p. 22 CD: Decomposition demonstration (3 min)			
week 9	<input type="checkbox"/> Read p.137-140 <input type="checkbox"/> Do OYO 5.3-5.4	<input type="checkbox"/> Read p.140-144 <input type="checkbox"/> Do OYO 5.5	<input type="checkbox"/> Read p.144-148 <input type="checkbox"/> Do OYO 5.6	<input type="checkbox"/> Read p.149-152 <input type="checkbox"/> Do OYO 5.7-5.9
LAB 10	Exp.5.1 Measuring the Width of a Molecule p. 149 (sample calculations in Solutions Manual p. 39) CD: Further explanation of Experiment 5.1 (6 min) Combustion of magnesium demonstration (1 min)			
week 10	<input type="checkbox"/> Read p.152-156 <input type="checkbox"/> Do OYO 5.10 <input type="checkbox"/> Review Questions	<input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra Probs. p.573 (opt.)	<input type="checkbox"/> Module 5 Test	<input type="checkbox"/> Read p.163-167 <input type="checkbox"/> Do OYO 6.1

MODULE 6				
LAB 11	Exp.6.1 Limiting Reactants p. 166			
week 11	<input type="checkbox"/> Read p.167-171 <input type="checkbox"/> Do OYO 6.2-6.3	<input type="checkbox"/> Read p.171-176 <input type="checkbox"/> Do OYO 6.4-6.5	<input type="checkbox"/> Read p.176-182	<input type="checkbox"/> Read p.182-186 <input type="checkbox"/> Do OYO 6.6-6.9 <input type="checkbox"/> Read MicroChem Exp.4
LAB 12	MicroChem Exp. 4 Mole Ratios p. 12			
week 12	<input type="checkbox"/> Read p.186-190 <input type="checkbox"/> Do OYO 6.10-6.11 <input type="checkbox"/> Review Questions	<input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra probs. p.574 (opt.)	<input type="checkbox"/> Module 6 Test	<input type="checkbox"/> Read p.201-206 <input type="checkbox"/> Do OYO 7.1
MODULE 7				
LAB 13	Exp. 7.1 Electrical Charge p. 203			
week 13	<input type="checkbox"/> Read p.206-213 <input type="checkbox"/> Do OYO 7.2-7.3	<input type="checkbox"/> Read p.213-219 <input type="checkbox"/> Do OYO 7.4-7.5	<input type="checkbox"/> Read p.219-224 <input type="checkbox"/> Do OYO 7.6-7.7	<input type="checkbox"/> Read p.224-233
LAB 14	Exp. 7.2 How the Eye Detects Color p. 223 CD: Atoms emitting individual wavelengths of light (5 min) Light without heat demonstration (2 min)			
week 14	<input type="checkbox"/> Read p.234-240 <input type="checkbox"/> Do OYO 7.8-7.12 <input type="checkbox"/> Start Review Questions	<input type="checkbox"/> Finish Review Questions <input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra Probs. p.575 (opt.)	<input type="checkbox"/> Module 7 Test	<input type="checkbox"/> Read p.247-251 <input type="checkbox"/> Do OYO 8.1
MODULE 8				
week 15	<input type="checkbox"/> Read p.251-257 <input type="checkbox"/> Do OYO 8.2	<input type="checkbox"/> Read p.257-260 <input type="checkbox"/> Do OYO 8.3-8.5	<input type="checkbox"/> Read p.261-267 <input type="checkbox"/> Do OYO 8.6-8.9	<input type="checkbox"/> Read p.267-272 <input type="checkbox"/> Do OYO 8.10-8.12
week 16	<input type="checkbox"/> Read p.272-276 <input type="checkbox"/> Review Questions	<input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra Probs. p.576 (opt.)	<input type="checkbox"/> Module 8 Test	<input type="checkbox"/> Quarterly Test #2 Solutions Manual p.207
MODULE 9				
week 17	<input type="checkbox"/> Read p.285-289 <input type="checkbox"/> Do OYO 9.1-9.3	<input type="checkbox"/> Read p.289-295	<input type="checkbox"/> Read p.296-300 <input type="checkbox"/> Do OYO 9.4-9.8	<input type="checkbox"/> Read p.300-307 <input type="checkbox"/> Do OYO 9.9-9.10
LAB 15	Exp. 9.1 Polar Covalent Versus Purely Covalent Compounds p. 300 Exp. 9.2 Solubility of Ionic Compounds in Polar Covalent and Purely Covalent Compounds p. 307			
week 18	<input type="checkbox"/> Read p.307-308 <input type="checkbox"/> Do OYO 9.11 <input type="checkbox"/> Start Review Questions	<input type="checkbox"/> Finish Review Questions <input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra Probs. p.577 (opt.)	<input type="checkbox"/> Module 9 Test	<input type="checkbox"/> Read p.319-324
MODULE 10				
LAB 16	Exp. 10.1 Common Household Examples of Acids and Bases p. 320 CD: Acid/base indicator demonstration (1 min)			
week 19	<input type="checkbox"/> Read p.324-329 <input type="checkbox"/> Do OYO 10.1-10.3	<input type="checkbox"/> Read p.329-333 <input type="checkbox"/> Do OYO 10.4-10.6	<input type="checkbox"/> Read p.333-338 <input type="checkbox"/> Do OYO 10.7-10.8	<input type="checkbox"/> Read p.338-345 <input type="checkbox"/> Do OYO 10.9-10.10 <input type="checkbox"/> Read MicroChem Exp.12, 13, 14
LAB 17	Exp. 10.2 Acid/Base Titration p. 342 (sample calculations in Solutions Manual p. 60) CD: Further explanation of Experiment 10.2 (5 min) MicroChem Exp. 12 A Microscale Titration p. 48 MicroChem Exp. 13 Molar Mass by Titration p. 53 (listed in MicroChem but not Apologia) MicroChem Exp. 14 A Buffer Solution p. 56 (listed in MicroChem but not Apologia)			
week 20	<input type="checkbox"/> Review Questions	<input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra probs. p.578 (opt.)	<input type="checkbox"/> Module 10 Test	<input type="checkbox"/> Read p. 353-361 <input type="checkbox"/> Read MicroChem Exp.5 <input type="checkbox"/> Read MicroChem Exp.10
MODULE 11				
LAB 18	Exp. 11.1 The Effect of Temperature on the Solubility of Solid Solutes p. 359 Exp. 11.2 The Effect of Temperature on the Solubility of a Gas p. 361 MicroChem Exp. 5 Double Replacement Reactions p. 16 MicroChem Exp. 10 Solubility Product Constant p. 37 (listed in MicroChem but not Apologia)			
week 21	<input type="checkbox"/> Read p.361-364 <input type="checkbox"/> Do OYO 11.1-11.3	<input type="checkbox"/> Read p.365-368 <input type="checkbox"/> Do OYO 11.4-11.5	<input type="checkbox"/> Read p.368-371 <input type="checkbox"/> Do OYO 11.6	<input type="checkbox"/> Read p.371-375 <input type="checkbox"/> Do OYO 11.7-11.10
LAB 19	Exp. 11.3 Investigation of a Solute That Releases Heat When Dissolved p. 363 Exp. 11.4 Freezing-Point Depression p. 369			
week 22	<input type="checkbox"/> Review Questions <input type="checkbox"/> Start Practice Problems	<input type="checkbox"/> Finish Practice Problems <input type="checkbox"/> Extra Probs. p.579 (opt.)	<input type="checkbox"/> Module 11 Test	<input type="checkbox"/> Read p.383-389 <input type="checkbox"/> Read MicroChem Exp.8 <input type="checkbox"/> Read MicroChem Exp.9
MODULE 12				
LAB 20	MicroChem Exp. 8 Boyle's Law p. 28 MicroChem Exp. 9 Charles's Law p. 33 CD: Demonstration of Boyle's Law (1 min)			
week 23	<input type="checkbox"/> Read p.389-394 <input type="checkbox"/> Do OYO 12.1-12.3	<input type="checkbox"/> Read p.394-400 <input type="checkbox"/> Do OYO 12.4-12.5	<input type="checkbox"/> Read p.400-404 <input type="checkbox"/> Do OYO 12.6-12.8	<input type="checkbox"/> Read p.404-408 <input type="checkbox"/> Do OYO 12.9-12.10
LAB 21	Exp. 12.1 Using the Ideal Gas Equation to Determine the Amount of Acid in Vinegar p. 404 (sample calculations in Solutions Manual p. 70) CD: Demonstration of the definition of boiling point (2 min)			
week 24	<input type="checkbox"/> Review Questions <input type="checkbox"/> Start Practice Problems	<input type="checkbox"/> Finish Practice Problems <input type="checkbox"/> Extra Probs. p.580 (opt.) <input type="checkbox"/> Start Module 12 Test	<input type="checkbox"/> Finish Module 12 Test <input type="checkbox"/> Start Quarterly Test #3 Solutions Manual p.211	<input type="checkbox"/> Finish Quarterly Test #3 Solutions Manual p.211 <input type="checkbox"/> Read p.417-422 <input type="checkbox"/> Do OYO 13.1

MODULE 13				
LAB 22	Exp. 13.1 Determining the ΔH of a Chemical Reaction p. 421 (sample calculations in Solutions Manual p. 74)			
week 25	<input type="checkbox"/> Read p.422-428 <input type="checkbox"/> Do OYO 13.2-13.3	<input type="checkbox"/> Read p.428-434 <input type="checkbox"/> Do OYO 13.4-13.5	<input type="checkbox"/> Read p.434-439 <input type="checkbox"/> Do OYO 13.6-13.8	<input type="checkbox"/> Read p.439-444 <input type="checkbox"/> Do OYO 13.9-13.10
week 26	<input type="checkbox"/> Read p.444-449 <input type="checkbox"/> Do OYO 13.11-13.12 <input type="checkbox"/> Start Review Questions	<input type="checkbox"/> Finish Review Questions <input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra Probs. p.581 (opt.)	<input type="checkbox"/> Module 13 Test	<input type="checkbox"/> Read p.459-464 <input type="checkbox"/> Do OYO 14.1-14.2
MODULE 14				
LAB 23	Exp. 14.1 Factors That Affect Chemical Reaction Rates p. 46 CD: Surface area demonstration (3 min)			
week 27	<input type="checkbox"/> Read p.464-468	<input type="checkbox"/> Read p.468-473 <input type="checkbox"/> Do OYO 14.3-14.6	<input type="checkbox"/> Read p.473-476	<input type="checkbox"/> Read p.477-480 <input type="checkbox"/> Do OYO 14.7-14.8 <input type="checkbox"/> Read MicroChem Exp.15 <input type="checkbox"/> Read MicroChem Exp.16
LAB 24	Exp. 14.2 The Effect of a Catalyst on the Decomposition of Hydrogen Peroxide p. 480 MicroChem Exp. 15 Reaction Rates: The Effect of Concentration, Reaction Order p. 60 MicroChem Exp. 16 Reaction Rates: The Effect of Temperature p. 66 CD: Reaction rate demonstration (4 min)			
week 28	<input type="checkbox"/> Read p.481-484 <input type="checkbox"/> Do OYO 14.9-14.11 <input type="checkbox"/> Start Review Questions	<input type="checkbox"/> Finish Review Questions <input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra probs. p.582 (opt.)	<input type="checkbox"/> Module 14 Test	<input type="checkbox"/> Read p.491-495
MODULE 15				
LAB 25	Exp. 15.1 A Demonstration of Equilibrium p. 493 CD: Equilibrium demonstration (2 min)			
week 29	<input type="checkbox"/> Read p.495-499 <input type="checkbox"/> Do OYO 15.1-15.4	<input type="checkbox"/> Read p.499-503 <input type="checkbox"/> Do OYO 15.5-15.7	<input type="checkbox"/> Read p.504-509 <input type="checkbox"/> Do OYO 15.8-15.9	<input type="checkbox"/> Read p.510-515 <input type="checkbox"/> Do OYO 15.10 <input type="checkbox"/> Read MicroChem Exp.11
LAB 26	Exp. 15.2 Temperature and Le Chatelier's Principle p. 510 CD: Le Chatelier's Principle demonstration (2 min) MicroChem Exp. 11 PH and PH Indicators p. 41			
week 30	<input type="checkbox"/> Read p.515-518 <input type="checkbox"/> Do OYO 15.11-15.13 <input type="checkbox"/> Review Questions	<input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra Probs. p.583 (opt.)	<input type="checkbox"/> Module 15 Test	<input type="checkbox"/> Read p.525-527 <input type="checkbox"/> Do OYO 16.1 <input type="checkbox"/> Read Exp. 16.1 p.535 <input type="checkbox"/> Read MicroChem Exp.6
MODULE 16				
LAB 27	Exp. 16.1 Invisible Writing p. 535 MicroChem Exp. 6 Oxidation-Reduction p. 19 CD: Oxidation numbers demonstration (3 min)			
week 31	<input type="checkbox"/> Read p.527-533 <input type="checkbox"/> Do OYO 16.2-16.4	<input type="checkbox"/> Read p.533-536 <input type="checkbox"/> Do OYO 16.5	<input type="checkbox"/> Read p.536-542 <input type="checkbox"/> Do OYO 16.6-16.7	<input type="checkbox"/> Read p.542-545 <input type="checkbox"/> Read MicroChem Exp.17
LAB 28	MicroChem Exp. 17 Electrochemistry: Galvanic Cells p. 70 CD: Example 16.5 demonstration (2 min)			
week 32	<input type="checkbox"/> Review Questions	<input type="checkbox"/> Practice Problems <input type="checkbox"/> Extra Probs. p.584 (opt.)	<input type="checkbox"/> Module 16 Test <input type="checkbox"/> Start Quarterly Test #4 Solutions Manual p.213	<input type="checkbox"/> Finish Quarterly Test #4 Solutions Manual p.213

Extra Items Needed for Labs (beyond the basic lab equipment)

Green shading indicates supplies needed for MicroChem Kit (MCK) experiments

Yellow shading indicates supplies needed for an alternate way to do the experiment

Lab	Exp. #	Page	Item Description	Person Supplying
1	1.1	1	meterstick or yardstick	
			2 balloons, at least 8 inches in diameter	
			string, about 2 feet	
			tape	
1	1.2	2	tall glass	
			paper towel	
2	1.3	27	book (to measure)	
			metric ruler	
			English ruler	
	1.4	29	vegetable oil, 50 mL (1/4 cup)	
maple syrup, 50 mL (1/4 cup), preferably not natural syrup				
large glass				
3	2.1	43	timer	
			distilled water, about 1 cup	
			ice, preferably crushed, about 1 cup	
4	2.2	58	2 Styrofoam cups	
			chunk of metal, >30grams, (lead sinker or steel nut)	
			kitchen tongs	
			timer	
5	3.1	71	measuring cup	
			teaspoon, used for measuring Lye	
			lye (Red Devil) or any <i>powdered</i> drain cleaner, 1 tsp	
			white vinegar, about 1/4 cup	
			several leaves of red (purple) cabbage	
			small pot for boiling water	
6	3.2	88	rubber cleaning gloves	
			distilled water, 1/2 gallon	
			baking soda, 1/2 teaspoon	
			sugar, 1/2 teaspoon	
			2 pieces of wire (insulated), each at least 15 cm long	
			wire strippers	
			tape, black electrical, about 6 inches	
	1/2 teaspoon, used to measure baking soda and sugar			
9-volt battery				
MCK 3	8	distilled water, 2 cups		
		sugar, 2 mL (about 1/2 teaspoon)		
7	4.1	101	teaspoon, used to measure sand (kitty litter) and salt	
			sand or non-clumping kitty litter, 1 teaspoon	
			salt, 1 teaspoon	
	4.2	107	30 mL water frozen in plastic graduated cylinder	
raw egg				
raw egg soaked overnight in vinegar				
toilet cleaner w / hydrogen chloride or hydrochloric acid, about 1 cup				
7	MCK 1	1	spoon that goes in toilet bowl cleaner	
			rubber cleaning gloves	
			Scotch tape	
			water-soluble felt-tip pens	
			food coloring, a few drops	
			dark fruit juice or vegetable juice, a few drops	

8	4.3	110	rectangular can with lid (Turpentine), thoroughly rinsed hot pads	
	4.3 alt.A		3 empty pop cans large roaster or broiling pan skillet oven mitts	
	4.3 alt.B		2-liter pop bottle with lid ice, about 1 gallon	
	4.4	113	2 glass canning jars, both the same size food coloring, 2 drops pan to boil water hot pad	
	MCK 2	5	fine wire pan to boil water	
9	MCK 7	22	salt, 1 teaspoon	
			masking tape or duct tape	
			paper towel	
			matches	
			6 wood splinters 50-75 mm long (for burning) distilled water, about 1¼ cup	
10	5.1	149	large glass, at least 16 ounces	
			dishwashing liquid (Joy or Sunlight), 5 mL (1 teaspoon)	
			bowl, 10-12 inches in diameter	
			pepper, about 1/8 teaspoon	
			metric ruler	
11	6.1	166	baking soda, 100 g (about 4 ounces)	
			vinegar, 750 mL (3 ¾ cups)	
			string and ruler, or tape measure	
			round balloon	
			plastic 2-liter bottle	
12	MCK 4	12	nothing needed except MicroChem Kit	
13	7.1	203	comb	
			aluminum foil, about 1 inch square	
			cellophane tape, 10 inches	
14	7.2	223	2 sheets of white paper	
			bright red marker or crayon	
15	9.1	300	Styrofoam or paper cup	
			pen	
			comb	
			vegetable oil, about ½ cup	
	9.2	307	salt, about 1/8 teaspoon	
			vegetable oil, about ½ cup	
16	10.1	320	apple	
			orange juice and/or soda pop, about 2 tablespoons	
			toilet bowl cleaner (The Works, Lime-Away), about 2 tablespoons	
			bar soap (not pH balanced)	
			all-purpose cleaner (Windex, 409), a couple squirts	
			powdered drain unclogger (Dran-O, Red Devil Lye), a few crystals rubber cleaning gloves	

17	10.2	342	distilled water, about 1 quart		
			white sheet of paper, no lines		
			red cabbage, a few leaves		
			clear ammonia, 20 mL (4 teaspoons)		
			clear vinegar, 100 mL (½ cup)		
	MCK 12	48	distilled water, about 11 mL (1 tablespoon)		
			vinegar, about 2 mL (1/2 teaspoon)		
		white paper, 1 sheet			
	MCK 13	53	distilled water, about 100 mL (½ cup)		
	MCK 14	56	nothing needed except MicroChem Kit		
18	11.1	359	table salt, 50 g (about 2 ounces)		
			oven mitt		
			freezer		
	11.2	361	ice, about 2 cups		
			oven mitt		
				cold soda pop, about ½ cup (carbonated)	
		MCK 5	16	nothing needed except MicroChem Kit	
	MCK 10	37	sheet of dark paper, preferably black		
19	11.3	363	lye (Red Devil) or any <i>powdered</i> drain cleaner, 3 tablespoons		
			tablespoon, to measure lye (don't stir with it if it's metal)		
				rubber cleaning gloves	
	11.4	369	¼ teaspoon, to measure salt		
table salt, ¼ teaspoon					
			freezer		
20	MCK 8	28	food coloring, a few drops		
			6 thin books of the same weight		
			graph paper, 3 sheets		
	MCK 9	33	ice, about 2 cups		
			graph paper, 1 sheet		
			needle-nose pliers		
			shallow pan (cake pan)		
			microwave (optional)		
21	12.1	404	plastic 2-liter bottle		
			round balloon, 8 inches in diameter		
			vinegar, 200 grams (about 1 cup)		
			baking soda, 40 grams (about 1 ½ ounces)		
			seamstress' tape measure or string and ruler		
			current atmospheric pressure (www.weather.com)		
22	13.1	421	2 Styrofoam coffee cups		
			vinegar, 100 mL (1/2 cup)		
			tablespoon, to measure lye		
			½ teaspoon, to measure lye		
			lye (Red Devil) or any <i>powdered</i> drain cleaner, 10 tablespoons		
23	14.1	460	toilet cleaner with hydrogen chloride or hydrochloric acid, about 1 cup		
			knife, sharp and nonserrated		
			spoon		
			antacid tablet (TUMS)		
			rubber cleaning gloves		

24	14.2	480	hydrogen peroxide, 75 mL (3/8 cup)	
			1/4 teaspoon, to measure yeast	
			baker's yeast, 1/4 teaspoon	
	MCK 15	60	graph paper, 2 sheets	
			white paper, 1 sheet	
			stop watch or watch with second hand	
MCK 16	66	graph paper, 2 sheets		
		printed paper, 1 sheet		
		stop watch or watch with second hand		
		hot tap water		
		ice, equivalent to about 1 cube		
25	15.1	493	3 plastic 2-liter bottles	
			4 small cups	
			2 bowls taller than the cups	
			serrated knife or strong scissors	
			small Phillips-head screwdriver or awl	
			towels	
26	15.2	510	clear ammonia solution (about 30 drops)	
			white vinegar (< 1/4 cup)	
			2 small cups	
			red cabbage leaves (a few)	
			pot for boiling water	
	ice, preferably crushed (about 2 cups)			
MCK 11	41	natural indicators (juice from dark fruits, vegetables, and flowers)		
27	16.1	535	large bowl	
			blank notebook paper without lines	
			scissors	
			cotton swab or paint brush	
			lemon juice (fresh or from concentrate), about 1 tablespoon	
			iodine solution, 50 drops	
	medicine dropper (if iodine bottle can't do drops)			
1 cup measuring cup				
MCK 6	19	scissors that can cut thin metal strips		
28	MCK 17	70	digital voltmeter with clips	
			scissors	