

Daily Lesson Plans for Dr. Jay Wile's

Discovering Design with Chemistry

Sample

Developed by

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Master List: Lab Supplies to Purchase for the Year

Note: The Master List does not include perishable items that should not be purchased far in advance, such as eggs and apples, or items that you certainly already have, such as water and ice.

Lab for Discovering Design with Chemistry (available from Nature's Workshop Plus)

- Safety goggles
- Watch glass
- Funnel
- Filter paper
- Two 50-mL graduated cylinders
- Litmus paper
- Two medicine droppers
- Alcohol burner
- Mass scale (accurate to 0.1 g)
- Thermometer
- 250-mL beaker
- Stirring rod
- 100-mL beaker
- Sodium hydroxide (40 g)
- Four test tubes
- Strontium chloride (20 g)
- Cupric sulfate (40 g)

Health/Beauty

- Alka-Seltzer tablet (or generic brand)
- antacid tablets (TUMS or any with calcium carbonate)
- bar soap
- hydrogen peroxide
- liquid hand soap
- mirror, wall or handheld

Kitchenware

- bowl, large
- bowl, small
- canning jar
- casserole dish (large but fits in the microwave)
- dish towel
- drinking glasses, three of the same size
- funnel
- juice glasses, three
- kitchen tongs
- knife, sharp kitchen
- lamp with a bare bulb (remove the shade)
- measuring cups: $\frac{1}{4}$ -cup, $\frac{1}{2}$ -cup
- measuring spoons: $\frac{1}{8}$ -t, $\frac{1}{4}$ -t, $\frac{1}{2}$ -t, 1-t, 1-T
- pan with lid
- pie pan, metal
- plate, small (dessert or saucer)
- pot holders or oven mitts
- strainer
- turkey baster
- whisk

Week 1

- Look at the lab supplies list for Week 1. Purchase any needed supplies.
- Also look at the lab supplies list for Week 2. Plan to purchase any supplies you do not already have.

Lab Supplies for Week 1

- softcover book
- ruler with both centimeters and inches

- _____ Day 1 Read the introduction and check out the course website (www.bereanbuilders.com/olc/ddchem).
- _____ Day 2 Read Chapter 1, *Measuring Up*, pages 1-5, solving “Comprehension Check” problems 1-2.
- _____ Day 3 Read from page 6 to “Converting Between Units” on page 9, completing “Comprehension Check” problems 3-4 and completing Experiment 1.1.
Enter Experiment score on the Test and Experiment Scores Form.
- _____ Day 4 Read from “Converting Between Units” on page 9 to “Scientific Notation” on page 13, completing “Comprehension Check” problems 5-6.
- _____ Day 5 Read from “Scientific Notation” on page 13 to Experiment 1.2 on page 17, completing “Comprehension Check” problems 7-8.

Week 2

- Look again at the lab supplies list for Week 2. Be sure you have already purchased any needed supplies.
- Also look at the lab supplies list for Week 3. Plan to purchase any supplies you do not already have.
- Items in boldface type are found in the **Lab for Discovering Design with Chemistry** that is available separately.

Lab Supplies for Week 2 (You will have to skip both experiments this week if you have not purchased the lab kit.)

- A funnel
- A 50-mL graduated cylinder**
- A medicine dropper**
- A small cylindrical container, like a pill bottle or the jars in which spices are sold (It needs to be able to hold water.)
- A metric ruler
- Water and a sink
- Safety goggles** (Wear them throughout the experiment.)

- _____ Day 1 Complete Experiment 1.2 and read to “Measuring Mass” on page 19, completing “Comprehension Check” problems 9-10.
Enter Experiment score on the Test and Experiment Scores Form.
- _____ Day 2 Read from “Measuring Mass” on page 19 to “More on Density” on page 25, completing
“Comprehension Check” problems 11-14.
- _____ Day 3 Read from “More on Density” on page 25 to the end of page 26, completing Experiment
1.3 and “Comprehension Check” problem 15.
Enter Experiment score on the Test and Experiment Scores Form.
- _____ Day 4 Do problems 1-13 in the review.
- _____ Day 5 Do problems 14-22 in the review.

Week 3

- Look again at the lab supplies list for Week 3. Be sure you have already purchased any needed supplies.
- Also look at the lab supplies list for Week 4. Plan to purchase any supplies you do not already have.
- Items in boldface type are found in the **Lab for Discovering Design with Chemistry** that is available separately.

Lab Supplies for Week 3 (You will have to skip both experiments this week if you have not purchased the lab kit.)

- A 100-mL beaker**
- A 250-mL beaker**
- An alcohol burner with stand, along with something you can use to light the burner**
- A funnel
- Filter paper**
- A $\frac{1}{8}$ -t measuring spoon
- Table salt
- Chervil (This is an herb. Any leafy herb, such as chopped parsley, will work. It can be dried or fresh.)
- Water
- Watch Glass (the curved, circular piece of glass in your kit)**
- Mass Scale**
- Milk
- Vinegar
- Safety goggles** (Wear them throughout the experiment.)

- _____ Day 1 Correct any of your errors in the review and study for the test.
- _____ Day 2 Take the test for Chapter 1.
Enter Test score on the Test and Experiment Scores Form.
- _____ Day 3 Read Chapter 2, *What's The Matter?*, from page 37 to the end of Experiment 2.1 on page 39, completing Experiment 2.1.
Enter Experiment score on the Test and Experiment Scores Form.
- _____ Day 4 Read from the end of Experiment 2.1 on page 39 to "Mass Conservation: It's Not Just a Good Idea, It's the Law!" on page 42, completing "Comprehension Check" problems 1-2.
- _____ Day 5 Read from "Mass Conservation: It's Not Just a Good Idea, It's the Law!" on page 42 to "Elements and Compounds" on page 44, completing Experiment 2.2 and "Comprehension Check" problem 3.
Enter Experiment score on the Test and Experiment Scores Form.

Week 4

- Look again at the lab supplies list for Week 4. Be sure you have already purchased any needed supplies..
- Items in boldface type are found in the **Lab for Discovering Design with Chemistry** that is available separately.

Lab Supplies for Week 4 (If you have not purchased the lab kit, adjust the experiment with the supplies and instructions below on Day 1.)

- A 100-mL beaker**
- A 50-mL graduated cylinder**
- Water
- Hydrogen peroxide (sold in drugstores for disinfecting wounds)
- Active dry yeast (sold in supermarkets for baking)
- A $\frac{1}{4}$ -t measuring spoon
- Matches or a lighter
- Toothpicks, round
- A sink
- Safety goggles** (Wear them throughout the experiment.) Note: you should buy a pair of safety goggles (available in hardware stores) if you do not purchase the lab kit.

_____ Day 1 Read from “Elements and Compounds” on page 44 to the end of Experiment 2.3 on page 47, completing Experiment 2.3 and “Comprehension Check” problems 4-5.
Enter Experiment score on the Test and Experiment Scores Form.

Experiment 2.3: (if you have not purchased the lab kit)

- Replace the 100-mL beaker with a small juice glass.
- Replace the graduated cylinder with a small plastic bottle, like the kind water comes in.

Change the following steps in the procedure:

2. Add $\frac{1}{8}$ cup of water to the small juice glass.
4. Add hydrogen peroxide to the small plastic bottle until it is $\frac{3}{4}$ full.
12. Hold the toothpick over the opening of the bottle so the ember is right above the opening. If nothing happens, lower the toothpick so the ember is inside the bottle.

_____ Day 2 Read from the top of page 48 to the end of page 50, completing “Comprehension Check” problems 6-7.

_____ Day 3 Read from the beginning of page 51 to “What’s Wrong with Dalton’s Theory: Part One” on page 54, completing “Comprehension Check” problems 8-9.

_____ Day 4 Read from “What’s Wrong with Dalton’s Theory: Part One” on page 54 to the end of page 60, completing “Comprehension Check” problems 10-11.

_____ Day 5 Do all problems in the review.

Week 5

- There are no experiments scheduled for Week 5.
- Look at the lab supplies list for Week 6. Plan to purchase any supplies you do not already have.

- _____ Day 1 Correct any of your errors in the review and study for the test.
- _____ Day 2 Take the test for Chapter 2.
Enter Test score on the Test and Experiment Scores Form.
- _____ Day 3 Read Chapter 3, *Making Sense of Atoms and Elements*, from page 67 to “Defining the Atoms that Make Up an Element” on page 70, completing “Comprehension Check” problems 1-2.
- _____ Day 4 Read from “Defining Atoms that Make Up an Element” on page 70 to the end of page 74, completing “Comprehension Check” problems 3-4.
- _____ Day 5 Read from the top of page 75 to “The Electromagnetic Spectrum” on page 78, completing “Comprehension Check” problems 5-6.

Sample