

THE MYSTERY OF
SCIENCE



Physics Lab Manual

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LIST OF MATERIALS BY LESSON

Note:

Students will need to have sketching tools available for almost every lesson. These include a pencil, colored pencils, a charcoal pencil, markers, etc. Space for their sketches is provided in this *Lab Manual*.

Students will do research in almost every lesson. They'll need access to books, a science encyclopedia, or the internet (*with parental guidance*).

When no other materials besides sketching tools and/or research resources are required for a lesson, the "Materials Needed" section has been omitted.

Lesson 2

- ☐ a simple recipe and its ingredients

Lesson 3

- ☐ Celsius and Fahrenheit thermometers (indoor or outdoor)
- ☐ tape measure (You'll need both metric and English/Imperial versions.)
- ☐ bathroom scale (You'll need both metric and English/Imperial versions.)
- ☐ measuring cup (You'll need both metric and English/Imperial versions.)
- ☐ car

Lesson 6

- ☐ recipe for cookies (Dough without mix-ins works best. For example, chocolate chip cookies don't work as well as sugar, peanut butter, or butter cookies.)
- ☐ ingredients for cookies
- ☐ package of multicolored M&M's

Lesson 7

- ☐ 1 Styrofoam ball, approximately 10 cm in diameter
- ☐ 2 Styrofoam balls, approximately 5 cm in diameter
- ☐ 3–4 toothpicks
- ☐ colored markers

Lesson 8

- ☐ measuring cup with metric markings (milliliters or ml) that will measure at least 500 ml
- ☐ water
- ☐ 3 rocks approximately the size of ping-pong balls or golf balls
- ☐ laundry marking pen or crayons

Lesson 9

- ☐ small glass bottle with a narrow neck (Don't use plastic.)
- ☐ 1–2 balloons
- ☐ 2-quart saucepan or bowl
- ☐ hot water
- ☐ recommended: safety goggles

Lesson 10

- ☐ 2 paper cups
- ☐ measuring spoon
- ☐ measuring cup
- ☐ table salt
- ☐ thermometer that can measure the temperature of the freezer
- ☐ paper adhesive labels

Lesson 11

- ☐ plastic drinking straw
- ☐ at least 1 meter of string
- ☐ scissors
- ☐ apple
- ☐ grape
- ☐ piece of cardboard or paper plate
- ☐ tape (clear tape or masking tape)

Lesson 12

- ☐ 20 small marshmallows (or grapes)
- ☐ cereal-size bowl

Lesson 15

- ☐ 5–6 smooth wooden blocks or other rectangular items of the same size that you can stack
- ☐ small PVC pipe about 30 cm long (The circumference of the pipe must be shorter than the height of your blocks.) or a meterstick

Lesson 16

- ☐ furniture polish spray
- ☐ table with a fairly large and smooth surface
- ☐ penny
- ☐ *The Mystery of Science: Physics Student Reader*

Lesson 17

- ☐ watch or stopwatch
- ☐ measuring tape (any type or length)

Lesson 18

- ☐ recipe for cookies
- ☐ ingredients for cookies
- ☐ a few M&M's
- ☐ tape measure or ruler
- ☐ appetite for cookies

Lesson 19

- ☐ straw
- ☐ piece of paper cut to the same length as the straw
- ☐ additional paper to make wings and a nose for your launcher
- ☐ tape

Lesson 20

- ☐ none if you go to a bowling alley
- ☐ 3–5 balls of varying weight (for example, Nerf ball, baseball, tennis ball)
- ☐ 3–5 household objects such as shoeboxes or milk cartons

Lesson 21

- ☐ small marshmallow (approximately 1 cm in diameter)
- ☐ small grape (approximately 2 cm in diameter)
- ☐ cereal-size bowl filled with water
- ☐ pencil
- ☐ meterstick

Lesson 24

- ☐ watercolor paint set or crayons
- ☐ small paintbrush
- ☐ paper

Lesson 26

- ☐ several different denominations of coins (penny, nickel, dime, quarter, and half dollar if you have one)
- ☐ carpet or rug

Lesson 30

- ☐ a miniature light bulb and light bulb holder
- ☐ 2 short (10 cm) pieces of insulated copper wire with an alligator clip attached to each end
- ☐ a 9-volt battery

Lesson 31

- ☐ 5–6 ring magnets
- ☐ pencil

Lesson 32

- ☐ small magnet
- ☐ sewing needle
- ☐ small amount of butter or margarine
- ☐ cereal-size bowl
- ☐ water