

Table of Contents

Introduction	4	Homogeneous and Heterogeneous Mixtures	38
Scientific Processes		Solutions, Colloids, and Suspensions	39
The Scientific Method	5	Types of Chemical Bonds	40
Scientific Definitions	6	Identifying Chemical Bonds	41
Laboratory Safety	7	Writing in Code	42
Equipment in the Laboratory	8	Number of Atoms by Formula	43
Using Lab Equipment	9	Chemical Formulas by Name	44
Tools for Measurement	10		
Using a Balance Scale	11	Forces and Motion	
Measuring Metric Length	12	Forces and Motion	45
Measuring Liquids	13	Balanced and Unbalanced Forces	46
Measuring Temperature	14	First Law of Motion	47
Choosing Units of Measurement	15	Second Law of Motion	48
Scientific Notation	16	Third Law of Motion	49
		Identifying Newton's Laws	50
Atoms and Elements		Determining Speed and Velocity	51
The Atom	17	Collisions	52
Elements	18	Gravity	53
Setting the Table	19	Effects of Gravity	54
The Periodic Table	20	Friction	55
Decoding the Elements	21	Air Resistance	56
Elements and Their Symbols	22	Potential vs. Kinetic Energy	57
Real-World Applications	23	Calculating Work	58
Atoms by Element	24	Pendulum Swings	59
Atomic Ions	25	The Period of a Pendulum	60
Symbolic Atoms	26		
Elemental Definitions Part I	27	Simple Machines	
Elemental Definitions Part II	28	Simple Machines	61
Properties of Metals and Nonmetals	29	Functions of Simple Machines	62
		Identifying Parts as Simple Machines	63
Chemistry		Levers at Work	64
Molecules	30	Three Classes of Levers	65
Three States of Matter	31	Classes of Levers	66
Physical and Chemical Properties	32	Inclined Planes	67
Physical Changes	33	Mechanical Advantage of Inclined Planes and Levers	68
Chemical Changes	34	Pulleys	69
Identifying Physical and Chemical Changes	35	Wheels and Axles	70
Mixtures, Compounds, and Solutions	36		
Separation of Mixtures	37		

Mechanical Advantage of Pulleys, Wheels and Axles	71
Wedges	72
Screws	73
Classifying Simple Machines	74
Uses for Simple Machines	75

Energy

The Various Forms of Energy	76
Types of Energy	77
Energy of One Kind or Another	78
From One Form to Another	79
Energy Transfers	80
Classifying Potential or Kinetic Energy	81
An Electric Generator	82
Energy from a Nuclear Reactor	83
Parts of a Nuclear Reactor	84
Alternative Energy Sources	85

Light and Sound

Terms of Light	86
Diagram of a Wave	87
Light Waves	88
Uses of Electromagnetic Energy	89
White Light Spectrum	90
Light Rays and Concave Lenses	91
Light Rays and Convex Lenses	92
Reflection	93
Refraction	94
Classify Refraction Materials	95
Diagram of a Sound Wave	96
How Do These Sound?	97
Sound on a Frequency Scale	98
Wave Velocity	99
How Loud Is Too Loud?	100

Magnetism and Electricity

Electrical Terms	101
Magnetic Terms	102
Types of Magnets	103

How Magnets Are Used	104
Magnetic Fields	105
Attract or Repel?	106
Series Circuit	107
Parallel Circuit	108
Identifying Types of Circuits	109
An Electric Motor	110
Comparing Magnetism and Electricity	111

Answer Key	112
-----------------------------	------------

Introduction

Each book in the *Power Practice*[™] series contains over 100 ready-to-use activity pages to provide students with skill practice. The fun activities can be used to supplement and enhance what you are teaching in your classroom. Give an activity page to students as independent class work, or send the pages home as homework to reinforce skills taught in class. An answer key is provided for quick reference.

The practical activities, charts, diagrams, and definition pages in *Physical Science* supplement and enrich classroom teaching to enhance students' understanding of vocabulary, functions, and processes fundamental to understanding how physical science works. This book features the following topics:

- forces and motions
- chemistry
- atoms and elements
- scientific process
- simple machines
- energy
- light and sound
- magnetism and electricity

Use these ready-to-go activities to "recharge" skill review and give students the power to succeed!

The Scientific Method

Scientists study problems and conduct experiments in a variety of ways. However, all use the scientific method. The **scientific method** is an organized way to find answers to a problem. Match each phrase in the word box to an activity that describes it. Then number the descriptions to show the correct sequence for the scientific method.

interpret data identify the problem	observe and record arrive at a conclusion	make a hypothesis test the hypothesis
--	--	--

- A** _____ A group of students discusses what they believe will be the outcome of an experiment they are about to conduct. Each student records a statement that will either be proven or disproven by the experiment.
- B** _____ Each member of the group carefully watches as the experiment proceeds. One group member writes down the comments of the group as they call out what they see.
- C** _____ After the experiment is complete, the group discusses their observations. They review their notes and create a graph that shows the results of the experiment. The group discusses what these findings might mean.
- D** _____ Now that the group has decided on a hypothesis, they are ready to proceed with the experiment. As they work, the group is cautious to test only one variable at a time and to follow all directions carefully.
- E** _____ The group reviews their notes and the data they have collected. After a short discussion, they decide whether or not the original hypothesis is correct.
- F** _____ A science group begins a discussion related to what they have been studying in class. They take turns posing questions they still have about the topic. Together, they decide on an experiment they would like to conduct. They hope the experiment will answer some of the questions they still have.

Scientific Definitions

The scientific method uses specific vocabulary related to each step in the process. Match each term in the word box to its definition.

hypothesis
experiment
data

control
procedure
conclusion

variable
theory

- 1 _____ This is the organized process used to test a hypothesis.
- 2 _____ This is an educated guess about the solution to a problem.
- 3 _____ This refers to the observations and measurements recorded during an experiment.
- 4 _____ This is a factor that changes in an experiment. Proper procedure calls for testing only one of these at a time.
- 5 _____ This is a set of statements or ideas that explain a group of facts or phenomena.
- 6 _____ This is the judgment based on the results of an experiment.
- 7 _____ This is a variable that is kept constant in an experiment.
- 8 _____ This refers to the series of steps taken in order to carry out an experiment.

Laboratory Safety

When conducting experiments, it is important to handle equipment correctly and follow procedures that keep students and equipment safe. Each of the following scenarios illustrates a safety rule that should be observed in a science laboratory. Match each phrase in the word box to the situation that describes it.

wear proper safety equipment

keep workspace clean and organized

use scientific smelling when needed

handle glass and sharp materials carefully

secure loose clothing and hair

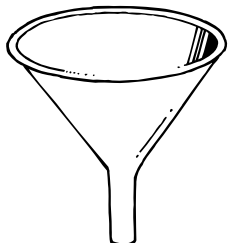
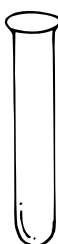
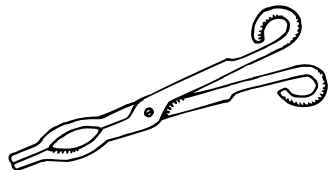
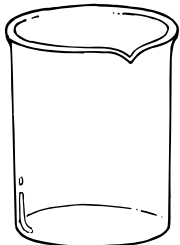
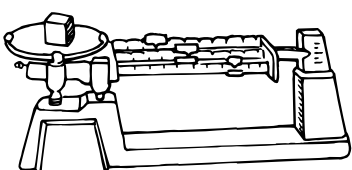
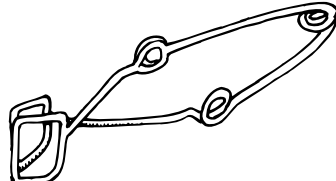
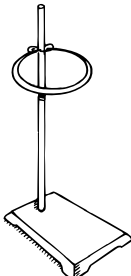
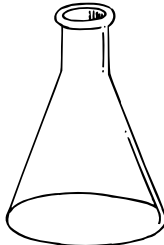
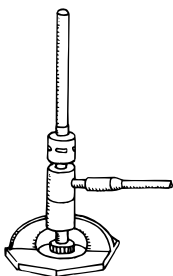

keep papers and other flammables away from flame

- _____ Tomas and Elizabeth prepare to begin today's experiment. Tomas rolls up his sleeves so they will not be in the way. He remembers how distracting it is to be pushing them up all the time. Elizabeth secures her long hair with a hair band, ensuring that her hair will be out of her face and away from the lab materials.
- _____ Today Lewis will be working with a Bunsen burner to heat materials in a test tube. Before he begins, Lewis clears away all the papers that covered his workspace. He also removes his sweater from his chair back and moves it to a coat hook on the far wall.
- _____ Alicia collects sensory data from her experiment. She writes down what she sees and hears. She notes that the substances also produced heat. Alicia is careful to hold the beaker away from her face and fans the air toward her nose as she sniffs carefully. She notices a faint smell like rotten eggs. She is thankful she did not take a big sniff.
- _____ Robert carries the beaker full of water with both hands, just to be safe. He would not want to clean up the mess or risk being cut if he were to accidentally drop it.
- _____ The students mop up spills and properly dispose of used materials as they work. In this way they will not contaminate the results of their experiments.
- _____ Patricia ties on a long apron and dons a pair of plastic safety glasses. The apron keeps materials from staining her clothes. The safety glasses protect her eyes from any flying substances or splashing liquids

Equipment in the Laboratory

To assist scientists and researchers in their investigations, specialized laboratory equipment serves various purposes. Use the terms in the word box to label the illustrations.

beaker funnel test tube clamp Erlenmeyer flask	graduated cylinder tongs Bunsen burner	test tube ring stand balance
---	--	------------------------------------

 1 _____	 2 _____	 3 _____	
 4 _____	 5 _____	 6 _____	
 7 _____	 8 _____	 9 _____	 10 _____

Using Lab Equipment

The equipment in a science lab is made to be used safely and for specific purposes. Match each term in the word box to its definition.

beaker funnel test tube clamp Erlenmeyer flask	graduated cylinder tongs Bunsen burner	test tubes ring stand balance
---	--	-------------------------------------

- 1
 _____ A heat-resistant glass vessel used for measuring, storing, or mixing liquids. It has a wide base and the narrow neck can be capped with a rubber stopper or cork.
- 2
 _____ A wide-mouthed glass vessel used for mixing, measuring and boiling. A spout makes pouring of materials easier.
- 3
 _____ This tool allows handling and holding of test tubes and other small items.
- 4
 _____ These small, heat-resistant glass vessels are the basis of all lab work. They allow for the mixing and testing of small amounts of material.
- 5
 _____ Useful in many lab activities, its narrow profile makes it an accurate measuring device for liquids.
- 6
 _____ This cone-shaped device allows liquids or powders to be transferred into narrow-necked containers.
- 7
 _____ This device allows hot beakers or other containers to be picked up safely.
- 8
 _____ This device accurately measures the mass of objects.
- 9
 _____ This is a gas burner used in laboratories. It allows for the proper mixture of gas and air.
- 10
 _____ This device allows containers to be suspended over a work surface or a heat source.