



Section I: Forces & Motion
Chapters one to five

Chapter 1

Science and Forces

- 1.1 Science and the Scientific Method
Activity: scientific method worksheet/ build electric racer part 1
- 1.2 Forces
Experiment: force/build the electric racer part 2
- 1.3 Push, Pull, and Newtons
Activity: forces and the racer

Chapter 2

Forces in our World

- 2.1 Gravity
Experiment: gravity's effect on objects
- 2.2 Friction
Experiment: racer with and without friction
- 2.3 Friction of fluids
Experiment: air as a fluid

Chapter 3

Mass, Inertia, Speed and Velocity

- 3.1 Mass and Inertia
Experiment: inertia and the racer
- 3.2 Force, Mass and Acceleration: Newton's 2nd Law
Experiment: mass and acceleration
- 3.3 Speed and Velocity
Experiment: velocity

Chapter 4

Forces in Motion

- 4.1 Action and Reaction: Newtons 3rd Law of Motion
Experiment: action and reaction
- 4.2 Centripetal Force
Experiment: the racer in motion
- 4.3 Lubricants, Heat and Wear
Experiment: wet and dry lubricants

Chapter 5

Pressure, Density, and Buoyancy

- 5.1 Pressure
Experiment: water pressure and height
- 5.2 Density and Buoyancy
Experiment: determine the density of different objects
- 5.3 Section Quiz
-- vocabulary quiz: chapters 1 - 5

Section II: Machines and Energy
Chapters six to nine

Chapter 6

Measurement, Work & Power

- 6.1 Measurement
Activity: measuring activity
- 6.2 Work
Experiment: work and the racer
- 6.3 Power
Activity: power and the racer

Chapter 7

Machines

- 7.1 Machines
Experiment: machines and pulleys
- 7.2 Levers and Fulcrums
Experiment: levers and fulcrum points
- 7.3 Inclined Planes, Ramps & Wedges
Experiment: inclined planes and ramps

Chapter 8

Compound Machines

- 8.1 Compound Machines
Activity: compound machines worksheet
- 8.2 Gears, Pulleys, and Power
Experiment: pulley ratios
- 8.3 Special Gears and Pulleys
Experiment: fixed and moveable pulleys

Chapter 9

Energy & its Forms

- 9.1 Kinetic, Potential, & Forms of Energy
Activity: worksheet/potential & Kinetic
- 9.2 Conservation of Energy
Experiment: energy conservation
- 9.3 Section review/quiz
-- vocabulary quiz

Section III: Electricity
Chapters ten to fourteen

Chapter 10

Electricity, Electrons, & Current

- 10.1 Electricity, Atoms, and Electrons
Activity: build circuit – part 1
- 10.2 Electrical Currents and Batteries
Activity: current worksheet/build circuit part 2
- 10.3 Voltage and Safety
Activity: voltage worksheet/test the circuit



Chapter 11

Static Electricity, Conductors, & Insulators

11.1 Static Electricity

Experiment: static hair

11.2 Opposites Attract/ likes Repel

Experiment: repelling balloons

11.3 Conductors and Insulators

Experiment: determine materials conductivity or insulating properties

Chapter 12

Circuits & Resistors

12.1 Electrical Circuits

Activity: open and closed circuits

12.2 Series and Parallel Circuits

Experiment: series and parallel

12.3 Resistors

Experiment: resistance of pencil lead

Chapter 13

Resistance, Voltage, & Switches

13.1 Resistance and Series/Parallel Circuits

Experiment: determine resistance of parallel vs. series circuit

13.2 Voltage and Batteries

Experiment: determine the effect of batteries in parallel vs. series

13.3 Switches

Activity: build a switch

-- determine resistance of LED lights

Chapter 14

Fuses & Sources of Electricity

14.1 Fuses -- ADULT SUPERVISION REQUIRED

Experiment: steel wool as a fuse

14.2 Sources of electricity

Activity: sources of electricity worksheet

14.3 Section review/quiz

-- vocabulary words

Section IV: Magnetism
Chapters fifteen to eighteen

Chapter 15

Magnets, Poles & Fields

15.1 Magnets

Activity: magnetic attraction

15.2 North and South Poles

Experiment: opposites attract

15.3 Magnetic Fields

Activity: invisible fields

Chapter 16

Compasses, Mapping, & Electromagnets

16.1 Compass

Activity: build a compass

16.2 Mapping and magnets

Activity: mapping

16.3 Electromagnets

Experiment: build and experiment with an electromagnet

Chapter 17

Magnets, Motors & Generators

17.1 Uses of magnets

Activity: worksheet/build motor part 1

17.2 Generators and motors

Activity: worksheet/build motor part 2

17.3 Magnets and Motors

Activity: magnetic field and the motor

Chapter 18

Motors & DC Current

18.1 Motors and DC current

Experiment: magnets/currents effect on motor direction.

18.2 Uses of Motors

Activity: build motor attachment

18.3 Section review/quiz

-- vocabulary quiz

Section V: Chemistry: matter
Chapters nineteen to twenty two

Chapter 19

Chemistry & Matter

19.1 Chemistry and Matter

Activity: build balance scale part 1

19.2 Classifying Matter

Activity: worksheet/build balance scale part 2

19.3 Scales: Types and Uses

Activity: build balance scale part 3

Chapter 20

Mass, Elements, & the Periodic Table

20.1 Mass

Activity: determining the mass of objects

20.2 Elements and the Periodic Table

Experiment: elements

20.3 Atoms and Molecules -- ADULT SUPERVISION
REQUIRED



Chapter 21

Molecules & Movement

21.1 Movement of Molecules

Experiment: expanding balloon

21.2 Conduction and Convection

Experiment: convection

21.3 Thermodynamics – heat transfer -- ADULT

SUPERVISION REQUIRED

Experiment: Flame proof balloon

Chapter 22

Physical & Chemical Properties

22.1 Physical versus Chemical Properties

Activity: determine the properties of materials

22.2 Metals

Experiment: metals and conductivity

22.3 Section review/quiz

-- vocabulary quiz

Section VI: Mixtures & Compounds

Chapters twenty three to twenty seven

Chapter 23

Mixtures & Molecules

23.1 Mixtures: solutions and suspensions

Experiment: solutions – salt and flour

23.2 Separating Mixtures

Experiment: separating ink

23.3 Miniature Images

Act: scanning microscopes

Chapter 24

Compounds, PH & Salts

24.1 Compounds

Activity: worksheet – compounds vs. mixtures

24.2 Acids and bases

Activity: Ph – litmus paper

24.3 Salts

Experiment: salt and water

Chapter 25

Crystals & Chemical Bonds

25.1 Crystals

Experiment: growing crystals

25.2 Chemical Bonds

Activity: chemical bonds of sodium bicarbonate

25.3 Conservation of Matter

Experiment: conservation of matter

Chapter 26

Chemical Reactions

26.1 Types of Chemical Reactions

Activity: worksheet/build rocket part 1

26.2 Rockets

Activity: build rocket part 2

26.3 Rocket Launches

Activity: testing the rocket

Chapter 27

The Results of Reactions

27.1 Chemical Reactions

Experiment: chemical reactions and the rocket

27.2 Products of Chemical Reactions

Experiment: what products does the rocket reaction produce?

27.3 Section review/quiz

-- vocabulary quiz

Section VII: Sound

Chapters twenty eight to thirty one

Chapter 28

Sound

28.1 Sound

Activity: build the guitar part 1

28.2 Energy and Sound

Experiment: vibration test/ build the guitar part 2

28.3 Tone

Activity: tone worksheet/build the guitar part 3

Chapter 29

Pitch & Sound Waves

29.1 Pitch

Activity: tune the guitar

29.2 Sound Waves

Experiment: sound waves and vibration

29.3 Mediums of Sound

Experiment: tuning fork

Chapter 30

Speed & Direction of Sound

30.1 Speed of Sound

Activity: clapping and the speed of sound

30.2 Sound Intensity: loud and soft sounds

Experiment: loud, soft, and vibrations

30.3 Echoes and Absorption

Experiment: test materials ability to reflect sound



Chapter 31

Electricity & Sound

- 31.1 Musical Instruments
Activity: make a "band"
- 31.2 Electrical Signals and Sound
Activity: worksheet -- how a phone works
- 31.3 Section review/quiz
-- vocabulary words

Chapter 36

Optics

- 36.1 Optics: how the eye works
Experiment: lingering light
- 36.2 Optics and the Brain
Activity: spin machine
- 36.3 Section review/quiz
-- vocabulary words

Section VIII: Light
Chapters thirty two to thirty six

Chapter 32

Light & Photons

- 32.1 Light
Activity: light worksheet/build solar fan part 1
- 32.2 Photons and Solar Energy
Activity: build solar fan part 2
- 32.3 How Light Travels
Experiment: traveling light

Chapter 33

Light Sources & their Affects

- 33.1 Light Sources
Experiment: light beams
- 33.2 Scattering Light
Experiment: scattering light
- 33.3 Shadows
Activity: make and use a sundial

Chapter 34

Reflecting & Bending Light

- 34.1 Objects and Light: transparent, translucent, opaque
Activity: classify objects by light type
- 34.2 Reflection
Experiment: reflection
- 34.3 Refraction: bending light
Experiment: bending light

Chapter 35

Colors, Prisms, & Types of Lights

- 35.1 Colors and prisms
Experiment: make a simple prism
- 35.2 Types of Light
Activity: identifying light
- 35.3 Other uses of Light
Activity: uses of light worksheet