

# Level Three Science

## Scientific Investigation

---

### Use of Instruments

Sample Activity No.

Identify instruments used to collect and analyze data: measuring sticks, timers, graduated cylinders, balances, microscopes, calipers, cameras, sound recorders, hot plates, burners, magnets, and collecting nets. ....3624, 3625

### Working Collaboratively

Learn benefits and challenges of working collaboratively and that teammates should be allowed individual freedom. ....3626, 3627

### Comparing and Contrasting

Use the essential science skills of comparing and contrasting when making observations. ....3628, 3629

### Show Scientific Ideas

Use sketches, diagrams, and models to represent scientific ideas. ....3630, 3631

### Predictions and Inferences

Make predictions and inferences based on observations. ....3632, 3633

### Use of Tables and Graphs

Use tables and graphs to identify patterns of change. ....3634, 3635

### Scientific Contributions

Use reference materials to learn about Alexander Graham Bell (sound), Copernicus (astronomy), Mae Jemison (exploration of space), and John Muir (ecology). ....3636, 3637

### Explaining Concepts

Conclude that events or concepts can be explained by collecting, organizing, and interpreting data. ....3638, 3639

### Scientific Discoveries

Identify scientific discoveries that have helped or hindered scientific progress in human health and the environment. ....3642, 3643

### Scientific Processes

Describe how scientific knowledge can help people solve problems, make decisions, and form new ideas. ....3644, 3645

## Nature of Matter

---

### Physical Properties

Determine physical properties of matter using customary and metric measurements with tools such as rulers, thermometers, and balances. ....3540, 3541

### Physical Changes

Identify matter as liquids, solids, and gases, and see physical changes in matter produced by heating and cooling. ....3542, 3543

### Weight

Realize that the weight of an object is equal to the sum of the weights of its parts. ....3544, 3545

### Observation

Use hand lenses to observe and document minute physical properties of objects. ....3546, 3547

## Energy, Force, and Motion

---

### Heat and Light Objects

Identify objects that emit heat and light. ....3648, 3649

### Forms of Energy

Identify different forms of energy, such as heat, light, and sound. ....3650, 3609, 3651

### Role of Sun

Understand that the Sun provides energy for Earth in the form of heat and light. ....3652, 3653

### Sources of Heat

Understand that heat can be produced by chemical reactions, electrical machines, and friction. ....3654, 3655

### Measuring Energy

Identify and use a variety of tools to measure the gain or loss of energy. ....3656

# Level Three Science

## Energy, Force, and Motion

*continued*

### Heat Transference

Sample Activity No.

Understand that when a warmer object comes in contact with a cooler one, the warm object loses heat and the cool one gains it (until they are both the same temperature). . . . .3658, 3659

### Energy for Life

Understand that some energy source is needed for organisms to stay alive and grow. . . . .3661

### Natural Resources

Identify natural resources and their importance. . . . .3662, 3663

### Renewable/Nonrenewable

Classify resources as renewable or nonrenewable, and describe their uses. . . . .3664, 3665

### Effects on Environment

Identify ways that using natural resources for producing energy affects the environment. . . . .3666, 3667

### Energy Causes Motion

Describe how energy is necessary to create a force that can cause motion. . . . .3668, 3669

### Motion of Objects

Describe the motion of various objects, including forward, circular, and wave motions. . . . .3670, 3671

### Elements of Waves

Identify the characteristics of waves, including crest, trough, and length. . . . .3672, 3673

### Simple Machines

Identify six types of simple machines: screw, inclined plane, wedge, pulley, lever, wheel, and axle. . . . .3674

### Force Causes

Understand that force causes change. . . . .3676, 3677

### Position/Direction of Objects

Measure and record changes in the position and direction of the motion of an object on which force (such as a push or pull) has been applied. . . . .3679

## Effects on the Shape of Earth

### Origins of Small Rocks

Understand that smaller rocks come from the breaking and weathering of bedrock and larger rocks. . . . .3550, 3551

### Amount of Water

Understand that about 75 percent of Earth's surface is covered by water, and describe stages of the water cycle. . . . .3552, 3553

### Weathering and Erosion

Identify the process of weathering and erosion, such as weathering of landforms and erosion of soil. . . . .34012, 34002, 3555, 3554

### Recycling

Identify and describe reusing, recycling, and reducing and how these processes improve and protect the condition of Earth. . . . .34011, 3557, 3556

## Ecology

### Habitats

Identify habitats and the relationships among organisms and their environment. . . . .3558, 3559

### Balance of Nature

Describe the concept of the balance of nature, and know that nature is constantly changing. . . . .3560, 3561

### Food Chain

Identify and describe the food chain: producers, consumers, and decomposers. . . . .3562, 3563

# Level Three Science

## Ecology

*continued*

### Effects on Ecosystems

Sample Activity No.

Identify ecosystems and how they can be affected by changes in environment such as precipitation, food supply, and changes caused by humans. . . . .3564, 3565

### Environmental Threats

Identify man-made threats to the environment (air and water pollution caused by emissions, smog, industrial waste, and chemical run-off). . . . .3566, 3567

### Environmental Protection

Describe measures people can take to protect the environment. . . . .3568, 3569

### Extinction

Learn that some organisms that once lived on earth have completely disappeared. . . . .34014

## Life/Environment Interact

### Animal and Plant Link

Describe ways that animals depend on plants for survival (food, shelter, and oxygen). . . . .34013, 3571, 3570

### Modifying the Environment

Describe how living organisms (such as beavers and birds) modify their physical environment to meet their needs. . . . .3572, 3573

### React to Changing Environment

Understand that when the environment changes, some plants and animals survive and reproduce, and others die or move to new locations. . . . .34033

### Extinction

Identify organisms that once lived on earth, but have completely disappeared. . . . .34034

### Vertebrate Animals

Identify characteristics of vertebrate animals (mammals, birds, fish, reptiles, and amphibians). . . . .33999, 3575, 3680, 3574

### Invertebrate Animals

Identify the distinguishing characteristics of invertebrate animals: flatworms, centipedes, sun jellyfish, black widow spiders, and octopuses. . . . .3576, 3577

### Comparing Plants

Identify similarities and differences among plants. . . . .3578, 3579

### Compare Plants and Animals

Identify similarities and differences between plants and animals, such as having structures for reproduction, respiration, and growth. . . . .3580, 3581

### Organism Competition

Identify ways that organisms with similar needs compete with one another for resources (such as oxygen, water, food, and space). . . . .3582, 3583

### Organisms and Animals Adapt

Identify behavioral and structural adaptations that allow plants and animals to survive in an environment. . . . .3584, 3585, 34035, 34038

### Classifying Organisms

Learn that living organisms get energy from food, and living things are classified as producers, consumers, carnivores, herbivores, and omnivores. . . . .3586, 3587

### Population Constraints

Demonstrate that the size of a population is dependent upon available resources. . . . .3588, 3589

# Level Three Science

## Light and Sound

---

	Sample Activity No.
<b>Travel of Light</b>	
Learn that light travels in straight lines at high speeds (and forms shadows). . . . .	3590, 3591
<b>Uses for Lenses</b>	
Identify uses for lenses (including: magnifiers, microscopes, cameras, telescopes). . . . .	3598, 3599
<b>Characteristics of Sound</b>	
Identify characteristics of sound including an object vibrating rapidly causes sound; sound travels through solids, liquids, and gases; sound travels slower than light. . . . .	3600, 3601
<b>Qualities of Pitch</b>	
Identify qualities of pitch (high or low) and intensity (loudness and softness). . . . .	3602, 3603
<b>Human Voice and Hearing</b>	
Learn about hearing, how the ear works, the human voice, larynx, vibrating vocal cords, and how to protect your hearing. . . . .	3604

## Astronomy

---

<b>Universe and Galaxies</b>	
Identify and describe the universe and galaxies, including the Milky Way and Andromeda. . . . .	3606, 3607
<b>Effects of Planetary Motions</b>	
Identify the planetary motions of rotating and revolving, and their effects on Earth, including the causes of day, night, and the seasons. . . . .	3610, 34032
<b>Gravitational Effects</b>	
Demonstrate an understanding of the gravitational effect of the Moon (and the Sun) on the Earth's tides. . . . .	3612
<b>Asteroid, Meteor, Comet</b>	
Identify characteristics of asteroids, meteoroids, and comets (include Haley's comet). . . . .	3616, 3617
<b>Solar Eclipse</b>	
Describe the cause of a solar eclipse. . . . .	3618, 3619
<b>Space Exploration</b>	
Investigate space exploration, including telescopes, rockets, satellites, the first moon landing by Apollo 11, and space shuttles. . . . .	3622, 3623
<b>Eras on Earth</b>	
<b>Mesozoic Era</b>	
Discover the Mesozoic Eras on Earth. . . . .	34029, 34030, 34031