

4th grade topic sequence

Week	Topic/Unit	Subtopics
1 (9/1-9/4)	Introduction to Science	-What is science? -What is it not? -What are we learning this year
2 (9/7-9/11)	Cells *Field trip Thursday & Friday	-Cells (demonstrated through onion cell lab) -different kinds of cells (animal and plant)
3 (9/14-9/18)	Cellular Structure	-Parts of a cell -Cellular models
4 (9/24- 9/25)	Classifying Living Things	-Characteristics of Plants -Characteristics of Animals
5 (9/28- 10/2)	Ecosystems	-Abiotic factors - Biotic factors - How each affects the ecosystems in different ways.
6 (10/5- 10/9)	Ecosystems	-Relationships in Ecosystems (predation, mutualism, commensalism) -Energy flow in an ecosystem and the 10% rule
7 (10/13-10/16)	Changes in Ecosystem	-Animal and Plant Adaptations -Responses to stimuli (mimicry, camouflage, extinction, tropism)
8 (10/19-10/23)	Changes in Ecosystem	-The impact of abiotic factors that result in major changes in ecosystems (focusing on the changes in Japan in the fall and winter)
9 (10/26-10/29)	Earth and its Resources	-Impact of water on shaping land masses
10 (11/2-11/6)	Earth and its Resources	-Earth and its land masses -The role of pressure in rock formation
11 (11/9-11/13)	Erosion	-Patterns of soil erosion
12 (11/16-11/20)	Conservation of Natural Resources	-Use of Fossil Fuels
13 (11/30-12/4)	Individual Project	
14 (12/7-12/11)	Individual Project	
15 (1/4-1/8)	Weather and Climate	-What's in the air: understanding the chemical composition of the air.
16 (1/12-1/15)	Weather and Climate	-the water cycle -types of clouds and precipitation

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17 (1/18-1/22)	Tracking weather	-How air masses form -how to track and predict weather.
18 (1/25-1/29)	Exploring Space	- The Earth and the Sun - The Earth and the Moon
19 (2/1-2/5)	Exploring Space	-Our Solar System -Stars and constellations -Building a solar system model
20 (2/8-2/12)	Matter	-What is matter (basic of particle model) -How we describe matter -3 major states of matter/classifying matter
21 (2/15-2/19)	Matter	-Measuring matter -Measuring irregular shapes
22 (2/22-2/26)	Changes in Matter	-Changes in matter (both physical and chemical)
23 (3/1-3/4)	Mixtures and compounds	-Defining mixtures and Compounds -separating mixtures and compounds
24 (3/7-3/11)	Acids, Bases, and PH	-Defining the parameters of acids and bases -Using pH indicators -How pH contributes to pollution
25 (3/14-3/18)	Forces: Motion	-Relationship between motion, speed, and acceleration.
26 (3/21-3/25)	Forces: Changes in Motion	-How forces affect motion -Frictions relation to motion
27 (4/11-4/15)	Forces: Work and Energy	-potential and kinetic energy (examples and demonstrations)
28 (4/18-4/22)	Forces: Simple Machines	-Constructing simple machines -Different types of simple machines -Forces used in simple machines
29 (4/25-4/29)	Energy: Heat	-Definition of energy -Differences between energy and matter -Flow of heat from areas of hotter areas to cooler -Introduce conduction, convection, and radiation

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Week	Topic/Unit	Subtopics
30 (5/9- 5/13)	Energy: Sound	-How sound travels -Changes in the movement of sound through varying mediums -Introduction to pitch, frequency, amplitude, etc.
31 (5/16-5/20)	Energy: Light	-Light traveling in a straight line -Modeling how light is absorbed, reflected and refracted.
32 (5/23-5/27)	Energy: Electricity	-Characteristics of an electrically charged object -Differences between static and current electricity.
33 (5/30- 5/3)	End of the year Individual Project	
34 (6/6-6/10)	End of the year Individual project	

A more detailed look at the major units:

1. Living Things

a. Cells

- i. parts of the cell (through onion lab)
- ii. looking at unicellular organisms under the microscope (bacteria, protozoan)
- iii. building a cellular model

b. Classifying Living Things

- Plant Kingdom

- i. Lab with Lima beans
- ii. How seeds plants reproduce (seed dispersal lab)

- Animal Kingdom

- i. animals without backbones
- ii. animals with backbones

2. Ecosystems

i. Abiotic and biotic factors

-Activity: outside to observe and classify biotic and abiotic factors in our surroundings

ii. Organization: ecosystem, community, population, individual

iii. Relationship in the ecosystem

iv. How energy cycles through an ecosystem and understanding the 10% rule.

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-Activities: modeling the work of decomposers through bread in plastic bags, plant responses to sunny and shady locations, how much light reaches the ocean floor (students build own forest and use lamps to see the amount of light able to penetrate), students build different biome models then analyze abiotic/biotic factors based on the characteristics of each biome, modeling the amount of energy living things use, biome mobile.

3. Changes in Ecosystems

- i. Animals Adaptations
- ii. Plants and their surroundings; plant adaptations and response to stimuli
-adaptation, camouflage, mimicry, tropism, accommodation, extinction
- iii. Ecosystems changes involving abiotic (non-living) factors
-Activity: plant growth as response to changes in soil and/or light.
changes in foliage as we enter autumn.

3. Earth and its resources

-Earth

- i. Water
- ii. The Earth as a land mass and its moving crust
- iii. Weathering and Erosion
- iv. Changes caused by the weather

Activities: constructing a model of features on Earth's surface, effect of pressure on rock formation (using modeling clay), path of water over a modeled land mass and how that path can change over time.

-Conservation of Earth's Resources:

- i. Minerals and Rocks
- ii. Soil
- iii. Fossil Fuels (Resources from the past)
- iv. Pollution and Conservation

Activities: observing different rocks qualities, comparing different soil samples, separating oil from water (simulating an oil spill cleanup), school conservation action plan, rate water flows through soil samples

4. Weather and Climate

- i. What's in the air? Understanding the chemical composition of the air.
- ii. The water cycle
- iii. Climate and weather

5. Exploring Space

- i. The Earth and Sun
- ii. Earth and the moon
- iii. The Solar System
- iv. Stars and constellations

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6. Matter

-Properties of Matter

- i. What is matter/ Describing matter
- ii. Measuring matter and the challenges to measuring different states of matter
- iii. Classifying matter

Activities: measuring different shapes to determine the volume and amount of matter, using graduated cylinders to measure irregular shapes (rocks, etc.), classifying different objects as different states of matter.

-Matter and its changes

- i. How matter can change (both chemically and physically)
- ii. Mixtures: how they are formed and separated
- iii. Compounds: how they are formed and what constitutes an acid or base.

7. Forces

- i. Motion and forces
- ii. Changing Motion
- iii. Work and Energy

8. Energy

- i. Heat
- ii. Sound
- iii. Light
- iv. Electricity

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