

Course: SCIENCE 7 Sub-topic: General

Course Description: The 7th Grade Science curriculum builds on what students learned in the previous year. Using a spiral method, lessons and activities are intended to build on and further student knowledge and engagement in a variety of topics in the realm of science. Students engage with and learn about many topics in the Life and Physical Science disciplines respectively.

Timeline: 3 Weeks

Unit Description:	Students will review the scientific method and design a controlled experiment. Students will carry out the controlled experiment and collect data to then write a detailed conclusion.
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Minutes for Topic: 120

Minutes for Topic: 120

Minutes for Topic: 120

Timeline: 3 Weeks

Unit Description:	Students will review the parts of an atom and how to read the periodic table. Students will then demonstrate the difference between elements and compounds and build compounds using a basic knowledge of electrons and bonding.
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Minutes for Topic: 41

Minutes for Topic: 82

Minutes for Topic: 41

Minutes for Topic: 120

Minutes for Topic: 82

Minutes for Topic: 82

Timeline: 5 Weeks

Unit	Students read about mountain changes in different mountains across the world.
Description:	Students will then use data of changes in mountains to research different types of rock and how layers of rock and rock types can help scientists understand the history of the Earth. Students will also show that rock types change through the rock cycle and demonstrate the rock cycle.Students will label the layers of the Earth and research the different characteristics of the layers of the Earth and develop a theory about the growth and shrinking of mountains around the world. Students will research the Theory of Plate Tectonics and present a news report to the class explaining how plate tectonics relates to a volcanic eruption or an earthquake.

Minutes for Topic: 160

Minutes for Topic: 82

Minutes for Topic: 82

Topic: Plate Boundaries and Geologic Formations

Minutes for Topic: 160

Topic: Mountain Formation

Minutes for Topic: 160

Unit: Characteristics of Life and Cells

Timeline: Week 1

Unit Students will use a microscope to look at cells. Students will model the parts of a cell
Description: and relate the function of cell parts to the functioning parts of a city using an analogy. Students will identify the differences between plant and animal cells.

Topic: Identifying the Characteristics of Life

Minutes for Topic: 160

Topic: Two types of Cells

Minutes for Topic: 82

Topic: Describe general Cell Structures

Minutes for Topic: 82

Topic: Using a Light Microscope

Minutes for Topic: 160

Topic: Plant Cells and Animal Cells

Minutes for Topic: 160

Unit: Cell Processes

Timeline: 3 Weeks

Unit Students will model osmosis into and out of a cell using an egg as a model. This
Description: movement through the cell membrane allows students to see that different materials are able to pass through the membrane. Students will identify the main components of cellular respiration and photosynthesis and demonstrate a knowledge of energy transformation and the laws of thermodynamics.

Topic: Cell Membrane Structure

Minutes for Topic: 82

Topic: Passive Transport

Minutes for Topic: 82

Topic: Osmosis

Minutes for Topic: 160

Topic: Active Transport

Minutes for Topic: 82

Topic: Energy Types

Minutes for Topic: 41

Topic: Energy Change in Photosynthesis

Minutes for Topic: 160

Topic: Energy Change in Cellular Respiration

Minutes for Topic: 82

Topic: Comparing Fermentation and Cellular Respiration

Minutes for Topic: 82

Unit: Genetics

Timeline: 8 Weeks

Unit Students will model the structure of DNA and develop a sketch of cell mitosis. Students
Description: will research the role of DNA in heredity and conduct an experiment demonstrating the dominance and recessive aspects of alleles. Students will research genetic technologies and the effect genetic technologies may have on the future of ecology on Earth.

Topic: The Cell Cycle

Minutes for Topic: 82

Topic: Mitosis and Cell Division

Minutes for Topic: 82

Topic: Structure of DNA

Minutes for Topic: 82

Topic: DNA replication for mitosis

Minutes for Topic: 82

Topic: DNA-->RNA

Minutes for Topic: 41

Topic: RNA Translation and Protein Making

Minutes for Topic: 160

Topic: Inherited vs. Acquired Traits

Minutes for Topic: 82

Topic: Genes and Alleles

Minutes for Topic: 82

Topic: Using Punnett squares

Minutes for Topic: 160

Topic: Genetic Technology Research and presentation

Minutes for Topic: 320

Unit: Natural Selection and Adaptations

Timeline: 2 Weeks

Unit Students will model artificial and natural selection using an online simulation. Students will look
Description: for evidence of natural selection using DNA comparison of organisms and fossil evidence in different rock layers.

Topic: Artificial Selection "Manipulating Genetics"

Minutes for Topic: 82

Topic: Properties of Natural Selection

Minutes for Topic: 82

Topic: Natural Selection Simulation

Minutes for Topic: 82

Topic: Fossil evidence of Natural Selection

Minutes for Topic: 82

Topic: Embryological evidence of natural selection

Minutes for Topic: 82

Unit: Growth, Development, and Reproduction of Organisms

Timeline: 3 Weeks

Unit Students dissect to perform a comparative analysis of invertebrates and humans. The
Description: human body systems are introduced and students identify the organs of the body that are part of specific organ systems.

Topic: Characteristics of Animals

Minutes for Topic: 82

Topic: Invertebrates vs. Vertebrates

Minutes for Topic: 82

Topic: Comparative Anatomy Invertebrate structures

Minutes for Topic: 160