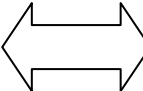
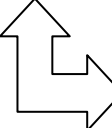



Grade 7 Science

| | | | |
|--|--|---|---|
| Unit Title | 7.1 Diversity of Living Things | | |
| Time frame | 6.5 weeks | | |
| 21 st Century Themes | Critical Thinking and Problem Solving Communication and Collaboration Initiative and Self-Direction Productivity and Accountability | | |
| Interdisciplinary focus and technology integration | Technology Math Art | | |
| Essential Questions | |  | Big Ideas |
| <ul style="list-style-type: none"> • What are the similarities and differences between the six kingdoms? • How and why do we classify living things? • What do all living things have in common? • What defines a species? | | | <ul style="list-style-type: none"> • All organisms belong to a kingdom based on their characteristics. |

| | |
|--|---|
| Learning Targets-students will be able to; | |
|  |  |
| <ul style="list-style-type: none"> • Describe the characteristics of the six kingdoms • Identify classification as a tool that humans use to give sense and order to the world • Using classification we can see that living things share common characteristics and requirements • Classify living things into one of the six kingdoms of life based on their characteristics • Use Linnaean methods of classification to classify organisms | |

Assessment

- Formal and Informal Teacher Observations
- Tests / Quizzes
- Diagrams and Models
- Student Projects
- Study Island Assignments
- Experiment/Investigation

Differentiation

- Hands-On Activities
- Diagnostic Assessment
- Kinaesthetic Activities
- Re-teach and Enrichment Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities

Content Standards

5.1.8. A.1- Core scientific concepts and principles represent the conceptual basis for model-building and facilitate the generation of new and productive questions.

5.1.8. A.2-Results of observation and measurement can be used to build conceptual-based models and to search for core explanations.

5.1.8. A.3-Predictions and explanations are revised based on systematic observations, accurate measurements, and structured data/evidence.

5.3.6. B.1 Describe the sources of the reactants of photosynthesis and trace the pathway to the products.

5.3.6. D.3 Distinguish between inherited and acquired traits/characteristics.

5.3.6. E.1 Describe the impact on the survival of species during specific times in geological history when environmental conditions changed.

5.3.8. A.1 Compare the benefits and limitations of existing as a single or multi-cellular organism.

5.3.8.A.2 Relate the structures of cells, tissues, organs and systems to their functions in supporting life.

5.3.8. B.1 Relate the energy and nutritional needs of organisms in a variety of life stages and situations, including stages of development and periods of maintenance.

5.3.8. B.2 Analyze the components of a consumer's diet and trace them back to plants and plant products.

5.3.8. E.1 Organize and present evidence to show how the extinction of a species is related to an inability to adapt to changing environmental conditions using quantitative and qualitative data.

5.3.8. E.2 Compare the anatomical structures of a living species with fossil records to derive a line of descent.

Approaches to Learning

- Notes and Examples
- Homework Practice
- Cumulative Review Exercises
- Test Prep Questions
- Hands-on Activities and Use of Manipulatives
- Problem Solving Activities/Experiments

Learning Experiences

Suggested Activities

Labs –Wet Mount-plant and animal cell

Assessments –
Parts and techniques of microscope use
Plant/animal cell diagrams

Chapter Outlines/Notes

Teaching Strategies

- Direct Instruction
- Differentiated Instruction
- Interdisciplinary Activities
- Cooperative Learning Activities
- Reinforcement and Remediation

Notebook Tests
Presentations
Project: cell model-build a cell

Resources

Text: PRENTICE HALL, LIFE SCIENCE, SCIENCE EXPLORER

Nonfiction trade books

Videos

Internet

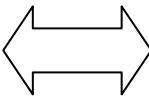
Equipment

Posters

Pictures

Models

Grade 7 Science

| | | |
|--|--|---|
| Unit Title | 7.2 Cell Structure and Function | |
| Time frame | 6.5 weeks | |
| 21 st Century Themes | Critical Thinking and Problem Solving Communication and Collaboration Initiative and Self-Direction Productivity and Accountability | |
| Interdisciplinary focus and technology integration | Technology Math Art | |
| Essential Questions |  | Big Ideas |
| <ul style="list-style-type: none"> • What are the common characteristics and needs of living things? • How are the structure and function of cells similar to that of the whole organism? • How did the invention of the microscope lead to the discovery of cells? | | <ul style="list-style-type: none"> • Cells are the basic unit and structure of living things. • All living organisms and their component cells have identifiable characteristics that allow for survival. • All animals are made of specialized cells, tissues, and organs that are organized into systems. • The invention of the microscope allowed for the discovery of cells and an increased understanding of the living world |

Learning Targets-students will be able to;

- Distinguish between living and non-living things
- Name and describe the cell part locations
- Recognize structure and functions of cells parts
- List the difference between plant/animal cells
- Name and describe the different types of cell transport
- Produce a wet mount slide
- Name and describe the parts of a microscope
- Use a microscope appropriately

Assessment

- Formal and Informal Teacher Observations
- Tests / Quizzes
- Diagrams and Models
- Student Projects
- Study Island Assignments
- Supplemental NJ ASK Practice Questions from NJ ASK Workbooks
- Experiment/Investigation

Differentiation

- Hands-On Activities
- Diagnostic Assessment
- Kinesthetic Activities
- Re-teach and Enrichment Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities

Content Standards

5.1.8.A.1- Core scientific concepts and principles represent the conceptual basis for model-building and facilitate the generation of new and productive questions.

5.1.8.A.2- Results of observation and measurement can be used to build conceptual-based models and to search for core explanations.

5.1.8.A.3- Predictions and explanations are revised based on systematic observations, accurate measurements, and structured data/evidence.

Life Science

5.3.8.A.1: Compare the benefits and limitations of existing as a single-celled organism and as a multicellular organism.

5.3.8.A.2

Relate the structures of cells, tissues, organs and systems to their functions in supporting life.

5.3.6.A.2

Model and explain ways in which organelles work together to meet the cell's needs.

Approaches to Learning

Observation skills- observing and communicating data in a lab report

Analyzing skills – recognizing relationships

Evaluation skills- developing criteria for judging their own work

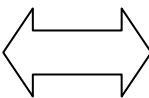
Scientific Inquiry Skills – formulate questions, hypothesize and conduct experiments

Inquiry skills – formulate questions, hypothesize and conduct experiments

| Learning Experiences Suggested activities | Teaching Strategies |
|--|---|
| Labs –Wet Mount-plant and animal cell Assessments – Parts and Techniques of Microscope Use Plant/Animal Cell Diagrams Chapter Outlines/Notes Notebook Tests Presentations Project: cell model-build a cell | <ul style="list-style-type: none"> •Direct Instruction •Differentiated Instruction •Interdisciplinary Activities •Cooperative Learning Activities •Reinforcement and Remediation |
| Resources | |
| <p style="text-align: center;">Text: PRENTICE HALL, LIFE SCIENCE, SCIENCE EXPLORER</p> <p style="text-align: center;">Nonfiction trade books</p> <p style="text-align: center;">Videos</p> <p style="text-align: center;">Internet</p> <p style="text-align: center;">Equipment</p> <p style="text-align: center;">Posters</p> <p style="text-align: center;">Pictures</p> <p style="text-align: center;">Models</p> | |

Grade 7 Science

| | |
|--|---|
| Unit Title | 7.3 Cell Process and Energy |
| Time frame | 6.5 weeks |
| 21 st Century Themes | Critical Thinking and Problem Solving Communication and Collaboration ICT (Information, Communications and Technology) Literacy Flexibility and Adaptability Initiative and Self-Direction Productivity and Accountability Financial, Economic, Business and Entrepreneurial Literacy |
| Interdisciplinary focus and technology integration | Technology : internet Art: diagrams and pictures Math : measurement Lang Arts; reading for main idea and specific info History |

| Essential Questions |  | Big Ideas |
|--|---|-----------------------------------|
| How are inorganic and organic compounds utilized within the cell? How do molecules pass through the cell membrane? What is the relationship between photosynthesis and cellular respiration? How does energy cycle throughout the cell? | | All organisms make or use energy. |

Learning Targets-students will be able to;

- Define elements and compounds
- Describe how water is important to the function of cells
- List the main kinds of organic molecules in living things
- Describe the events that occur during respiration
- List and describe the events that take place during the three stages of the cell cycle
- Describe how the structure of DNA helps account for the way in which DNA copies itself

Assessment

- Formal and Informal Teacher Observations
- Tests / Quizzes
- Diagrams and Models
- Student Projects
- Study Island Assignments
- Supplemental NJ ASK Practice Questions from NJ ASK Workbooks
- Experiment/Investigation

Differentiation

Observation skills- observing and communicating data in a lab report

Analyzing skills – recognizing relationships

Evaluation skills- developing criteria for judging their own work

Scientific Inquiry Skills – formulate questions, hypothesize and conduct experiments

Inquiry skills – formulate questions, hypothesize and conduct experiments

Content Standards

5.1.8. A.1- Core scientific concepts and principles represent the conceptual basis for model-building and facilitate the generation of new and productive questions.

5.1.8. A.2- Results of observation and measurement can be used to build conceptual-based models and to search for core explanations.

5.1.8. A.3- Predictions and explanations are revised based on systematic observations, accurate measurements, and structured data/evidence.

Life Science

5.3.8. A.1: Compare the benefits and limitations of existing as a single-celled organism and as a multicellular organism.

5.3.8.A.2

Relate the structures of cells, tissues, organs and systems to their functions in supporting life.

5.3.8.B.1

Relate the energy and nutritional needs of organisms in a variety of life stages and situations, including stages of development and periods of maintenance.

5.3.8.B2

Analyze the components of a consumer's diet and trace them back to plants and plant products.

5.3.6.A.1

Model the interdependence of the human body's major systems in regulating its internal environment.

5.3.6.A.2

Model and explain ways in which organelles work together to meet the cell's needs.

Approaches to Learning

Observation Skills

Analyzing Skills

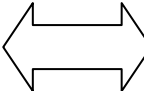
Evaluation Skills

Scientific Inquiry Skills

Integrating and Summarizing Skills

| Learning Experiences | Teaching Strategies |
|---|---|
| Suggested activities | |
| <ul style="list-style-type: none"> • Assessments • Chapter Outlines/Notes • Notebook Tests • Presentations | <ul style="list-style-type: none"> •Direct Instruction •Differentiated Instruction •Interdisciplinary Activities •Cooperative Learning Activities •Reinforcement and Remediation |
| Resources | |
| <ul style="list-style-type: none"> •: Textbook: Prentice Hall Science Explorer : Life Science • Trade books •Handouts •Posters/Diagrams •Internet •Videos | |

Grade 7 Science

| | | | |
|--|--|---|--|
| Unit Title | 7.4 Cell Reproduction and Heredity | | |
| Time frame | 6 weeks | | |
| 21 st Century Themes | Critical Thinking and Problem Solving Communication and Collaboration Initiative and Self-Direction Productivity and Accountability | | |
| Interdisciplinary focus and technology integration | Technology Math Art | | |
| Essential Questions | |  | Big Ideas |
| <p>In what ways are organisms of the same kind different from each other? How does this help them reproduce and survive?</p> <p>How do organisms change as they go through their life cycle?</p> | | | <p>Organisms produced by sexual reproduction inherit half their DNA from each parent. The new combination of DNA determines organism's traits.</p> <p>Karyotyping, hybridization, cloning, genetic engineering, the Human Genome Project, and DNA fingerprinting are all science and technology applications that have advanced the study of genetics.</p> |

Learning Targets-students will be able to;

- List and describe the results of Mendel's experiments, or crosses
- Explain what controls the inheritance of traits in organisms
- Define probability and describe how it helps explain the results of genetic crosses
- Describe genotype and phenotype
- Define co-dominance
- Describe what role chromosomes play in inheritance
- List and describe the events which occur during meiosis
- Explain the relationship between chromosomes and genes
- Describe some patterns of inheritance in humans
- List and describe the functions of the sex chromosomes
- Explain the relationship between genes and the environment
- List two major causes of genetic disorders in humans
- Describe how geneticists trace the inheritance of traits
- Explain how genetic disorders are diagnosed and treated
- List and describe three ways of producing organisms with desired traits
- Identify the goal of the Human Genome Project

Assessment

- Formal and Informal Teacher Observations
- Tests / Quizzes
- Diagrams and models
- Student Projects
- Study Island Assignments
- Experiment/Investigation

Differentiation

- Hands-On Activities
- Diagnostic Assessment
- Kinaesthetic Activities
- Re-teach and Enrichment Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities

Content Standards

5.1 Science Practices

5.3.8.D.1 Defend the concept that through reproduction , genetic traits are passed form one generation to the next using evidence collected form observations of inherited traits.

5.3.8.D.2 Explain the source of variation among siblings.

5.3.8.D.3 Describe the environmental conditions or factors that may lead to a change in a cell's genetic information or to an organism's development and how these changes are passed on.

5.3.8.E.1 Organize and present evidence to show how the extinction of a species is related to an inability to adapt to changing environmental conditions using quantitative and qualitative data.

Approaches to Learning

Observation skills- observing and communicating data in a lab report

Analyzing skills – recognizing relationships

Evaluation skills- developing criteria for judging their own work

Scientific Inquiry Skills – formulate questions, hypothesize and conduct experiments

Inquiry skills – formulate questions, hypothesize and conduct experiments

Learning Experiences

Suggested activities

- Chapter Outlines/Notes
- Notebook Tests

Teaching Strategies

- Direct Instruction
- Differentiated Instruction
- Interdisciplinary Activities

- Presentations

- Cooperative Learning Activities
- Reinforcement and Remediation

Resources

Text: PRENTICE HALL, LIFE SCIENCE, SCIENCE EXPLORER

Internet

Videos

Equipment

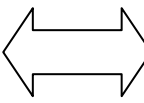
Posters

Pictures

Models

Grade 7 Science

| | |
|--|--|
| Unit Title | 7.5 Human Biology |
| Time frame | |
| 21 st Century Themes | Critical Thinking and Problem Solving Communication and Collaboration Initiative and Self-Direction Productivity and Accountability |
| Interdisciplinary focus and technology integration | Technology Math Art |

| Essential Questions |  | Big Ideas |
|---|---|--|
| <p>How do the systems of the human body work together?</p> <p>How does the digestive system obtain nutrients for the body?</p> <p>What are the major functions of the circulatory system?</p> <p>What are the major functions of the respiratory and excretory system?</p> <p>How does the human body fight disease?</p> <p>Which organs and other structures enable the nervous system to function?</p> <p>What role does the endocrine system play in reproduction?</p> | | <p>Each body system plays an essential role in keeping the human body healthy.</p> |

Learning Targets-students will be able to;

- Describe the levels of organization in the body and homeostasis.
- Explain the functions of the skeleton?
- Identify the types of muscles that are found in body.
- Describe the functions and structure of skin and how to keep it healthy.
- Explain how the six nutrients needed by the human body to help carry out essential processes.
- Describe the functions carried out in the digestive system.
- Explain the functions of the cardiovascular system.
- List and describe some diseases of the cardiovascular system and how to maintain cardiovascular health.
- Describe the functions of the respiratory system.
- List chemicals found in tobacco smoke and describe how tobacco smoke affects a person's health over time.

Explain the relationship between pathogens and infectious disease.
 Describe how the body acquires active immunity and how passive immunity occurs.

Explain what causes allergies.
 Describe the effects of cancer and diabetes on the body.
 List and describe the functions of the nervous system.
 Explain how your senses including sight, hearing, smell, touch, and taste work.
 Describe how the endocrine system controls body processes.
 Explain sexual reproduction.
 Describe the stages of human development that occur before birth and from infancy to adulthood.

Assessment

- Formal and Informal Teacher Observations
- Tests / Quizzes
- Diagrams and Models
- Student Projects
- Experiment/Investigation

Differentiation

- Hands-On Activities
- Diagnostic Assessment
- Kinaesthetic Activities
- Re-teach and Enrichment Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities

Content Standards

5.1 Science Practices
5.3.6. A.1 Model the interdependence of the human body’s major systems in regulating its internal environment.
5.3.6. A.2 Model and explain ways in which organelles work together to meet the cell’s needs.
5.3.8. A.2 Relate the structures of cell, tissues, organs and systems to their functions in supporting life.

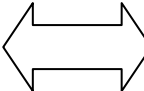
Approaches to Learning

Observation skills- observing and communicating data in a lab report
Analyzing skills – recognizing relationships
Evaluation skills- developing criteria for judging their own work
Scientific Inquiry Skills – formulate questions, hypothesize and conduct experiments
Inquiry skills – formulate questions, hypothesize and conduct experiments

| Learning Experiences Suggested activities | Teaching Strategies |
|--|---|
| <ul style="list-style-type: none"> • Chapter Outlines/Notes • Notebook Tests • Presentations | <ul style="list-style-type: none"> •Direct Instruction •Differentiated Instruction •Interdisciplinary Activities •Cooperative Learning Activities •Reinforcement and Remediation |
| Resources | |
| <p>Text: PRENTICE HALL, LIFE SCIENCE, SCIENCE EXPLORER</p> <p>Nonfiction trade books</p> <p>Videos</p> <p>Internet</p> <p>Equipment</p> <p>Posters</p> <p>Models</p> | |

Grade 7 Science

| | |
|--|--|
| Unit Title | 7.6 Ecology |
| Time frame | 6.5 weeks |
| 21 st Century Themes | Critical Thinking and Problem Solving Communication and Collaboration Initiative and Self-Direction Productivity and Accountability |
| Interdisciplinary focus and technology integration | Technology-Use the internet to explore ecosystems Math-Read and analyze data found on a graph Art-Illustrate a food web |

| Essential Questions |  | Big Ideas |
|---|---|--|
| <ul style="list-style-type: none"> •How do the living and nonliving parts of an ecosystem interact? •How do matter and energy flow through ecosystems? •What are the main types of environmental issues? | | <ul style="list-style-type: none"> • The population of any organism in an ecosystem is dependent upon the supply of a- biotic and biotic resources within that ecosystem . • There can be interdependent relationships between organisms in an ecosystem. • In ecosystems, matter cycles between organisms and the environment. Energy from sunlight is not recycled, but moves through organisms in food chains. • All organisms cause changes in the ecosystem in which they live. If this change reduces another organism's access to resources, that organism may move to another location or die. |

Learning Targets-students will be able to;

- Identify needs met by an organism's environment.
- Describe the levels of organization within an ecosystem
- Explore how ecologists determine the size of a population
- Describe how an organism's adaptations help it to survive
- Explain an organisms energy role in an ecosystem
- Understand the components of the cycles of matter
- Understand that various human activities have changed the capacity of the environment to support some life forms.
- Identify the 6 major biomes found on Earth
- Describe the 3 environmental issues that we face today (resource use, population growth, & pollution)
- Identify ways that biodiversity is valuable both economical and ecological.

Assessment

- Formal and Informal Teacher Observations
- Tests / Quizzes
- Diagrams and Models
- Student Projects
- Study Island Assignments
- Supplemental NJ ASK Practice Questions from NJ ASK Workbooks
- Experiment/Investigation

Differentiation

- Hands-On Activities
- Diagnostic Assessment
- Kinaesthetic Activities
- Re-teach and Enrichment Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities

Content Standards

5.1.8.A.1- Core scientific concepts and principles represent the conceptual basis for model-building and facilitate the generation of new and productive questions.

5.1.8.A.2- Results of observation and measurement can be used to build conceptual-based models and to search for core explanations.

5.1.8.A.3- Predictions and explanations are revised based on systematic observations, accurate measurements, and structured data/evidence.

5.3 Life Science All students will understand that life science principles are powerful conceptual tools for making sense of the complexity, diversity, and interconnectedness of life on Earth. Order in natural systems arises in accordance with rules that govern the physical world, and the order of natural systems can be modelled and predicted through the use of mathematics.

C. Interdependence: All animals and most plants depend on both other organisms and their environment to meet their basic needs.

5.3.6.C.1 Explain the impact of meeting human needs and wants on local and global environments

5.3.6.C.2 Predict the impact that altering biotic and abiotic factors has on an ecosystem.

5.3.6.C.3 Describe how one population of organisms may affect other plants and/or animals in an ecosystem

5.3.8.C.1 Model the effect of positive and negative changes in population size on a symbiotic pairing.

E. Evolution and Diversity: Sometimes, differences between organisms of the same kind provide advantages for surviving and reproducing in different environments. These selective differences may lead to dramatic changes in characteristics of organisms in a population over extremely long periods of time.

5.3.6.E.1 Describe the impact on the survival of species during specific times in geologic history when environmental conditions changed.

5.3.8.E.1 Organize and present evidence to show how the extinction of a species is related to an inability to adapt to changing environmental conditions using quantitative and qualitative data.

5.3.8.E.2 Compare the anatomical structures of a living species with fossil records to derive a line of descent.

Approaches to Learning

- Observation Skills
- Analyzing Skills
- Evaluation Skills

Learning Experiences

Suggested activities

- Make a miniature biome (p.756)
- Assessments
- Chapter Outlines/Notes
- Notebook Tests
- Presentations
- Project: Conduct an experiment to learn about the process of decomposition (p. 739)

Teaching Strategies

- Direct Instruction
- Differentiated Instruction
- Interdisciplinary Activities
- Cooperative Learning Activities
- Reinforcement and Remediation

Resources

Text: PRENTICE HALL, LIFE SCIENCE, SCIENCE EXPLORER
Nonfiction trade books
Videos
Internet
Equipment
Posters
Pictures
Models