

Quinton Township School District
Science Curriculum Guide
Grade 7
[Pacing Guide](#)

Marking Period	1	Unit Title	Structure, Properties and Changes in Matter	Pacing	30 days
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Unit Summary: Students build understandings of what occurs at the atomic and molecular scale. Students apply their understanding that pure substances have characteristic properties and are made from a single type of atom or molecule. They also provide molecular level accounts to explain states of matter and changes between states. The crosscutting concepts of cause and effect, scale, proportion and quantity, structure and function, interdependence of science, engineering, and technology, and the influence of science, engineering and technology on society and the natural world provide a framework for understanding the disciplinary core ideas. Students demonstrate grade appropriate proficiency in developing and using models, and obtaining, evaluating, and communicating information. Students are also expected to use the scientific and engineering practices to demonstrate understanding of the core ideas.

Knowledge - By the end of this unit, students will know:

- Everything in the universe is made of matter.
- Elements are composed of atoms which are simple substances that can't be broken down into other substances.
- How the Periodic Table is arranged.
- Molecules are combinations of various elements that result in brand new substances.

Skills - By the end of this unit, students will be able to:

- Describe the basic structures of atoms and molecules
- Demonstrate how both mass and volume are measured and then use this information to calculate for density.
- Distinguish between weight and mass.
- Describe the difference between physical and chemical properties and give examples of each.

Essential Questions:

- How is matter structured, classified, and transformed, and how do we measure and interpret its properties?

NJSLS - Science Standards:

- **MS-PS1-1** - Develop models to describe the atomic composition of simple molecules and extended structures

- **MS-PS1-2** - Analyze and interpret data on the properties of substances
- **MS-PS1-3** - Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
- **MS-PS1-4** - Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed,

Interdisciplinary Connections: RI.CR.7.1, W.WR.7.5, W.SE.7.6, SL.PI.7.4, 6.SP.B.4, 8.EE.A.3

Career Readiness, Life Literacies, and Key Skills: 9.4.8.CT.2, 9.4.8.CI.3, 9.4.8.CI.4, 9.4.8.CT.3

Computer Science and Design Thinking: 8.1.8.IC.1, 8.1.8.DA.3, 8.2.8.ED.2, 8.2.8.ITH.2, 9.4.8.DC.1, 9.4.8.IML.1, 9.4.8.IML.3, 9.4.8.TL.3

Career Education: 9.2.8.CAP.10

Overview of Activities	Core Resources	Supplemental Materials	Technology Infusion
● Matter and Its Properties Classwork/Homework ● Lab 1: Measuring Matter ● Lab 2: Build an Atom Lab ● Lab 3: Build a Molecule ● Lab 4: Determining Density	● Matter and Its Properties Classwork/Homework Answers Guide ● Matter and Its Properties SMART Notebook Notes ● NJCTL.com ● Legends of Learning ● Edpuzzle ● Matter and Its Properties Pacing Guide	● Matter and Its Properties SMART Notebook Notes ● Matter and Its Properties Classwork/Homework ● Labs	● SMARTboard Applications ● Google Applications ● Legends of Learning ● Edpuzzle

Assessments	
Formative Assessments ● Daily Science Starters ● Daily/Weekly Classwork & Homework Completion ● Kahoot! ● Rubric-for projects ● Self-reflection	Summative Assessments ● Quiz 1 - Matter and Periodic Table ● Quiz 2 - Physical Properties of Matter ● Quiz 3 - Density ● Quiz 4 - States of Matter ● Test - Matter and Its Properties Test
Benchmark Assessments	Alternative Assessments

- District-assigned Benchmark Assessments (e.g. LinkIt, literacy screeners, content-specific benchmarks)

- Alternative Choice Projects
- Oral Assessments

Differentiation			
Special Education	MLL	At Risk	Gifted and Talented
● Teacher's aide will read to the students as needed ● Students can type or speech to text notes. ● The students will be given study guides for tests ● Students will be given notes for quizzes ● Projects will be modified for students who need it to be. ● Homework is also modified for those students who need it. ● Students will be given extra time to complete all assignments. ● All quizzes and tests have been modified for the students to meet their needs. ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs,	● Provide MLL students with multiple literacy strategies. ● Rosetta Stone ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). ● Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. ● Translate printed communications for parents in native language ● Hold conferences with translator present	● Teacher's aide will read to the students as needed ● Students can type or speech to text notes. ● Students will be given extra time to complete all assignments. ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). ● Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding. ● Make modifications to instructional plans based on I and RS Plan.	● Allow students to provide additional support for students struggling (peer teaching) ● Expanded learning projects to further student understanding ● Student teaching lessons ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). ● Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.

charts, data tables, multimedia, modeling). • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding. • Use project-based science learning to connect science with observable phenomena. • Structure the learning around explaining or solving a social or community-based issue. • Collaborate with after-school programs or clubs to extend learning opportunities.	• Review Special Education listing for additional recommendations		• Use project-based science learning to connect science with observable phenomena. • Promote self-initiated and self-directed learning and growth. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.
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Marking Period	1-2	Unit Title	Chemical Reactions	Pacing	30 days
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Unit Summary: Students provide molecular-level accounts of states of matters and changes between states, of how chemical reactions involve regrouping of atoms to form new substances, and of how atoms rearrange during chemical reactions. Students also apply their understanding of optimization design and process in engineering to chemical reaction systems. The crosscutting concept of *energy and matter* provides a framework for understanding the disciplinary core ideas. Students are expected to demonstrate proficiency in *developing and using models, analyzing and interpreting data, designing solutions, and obtaining, evaluating, and communicating information*. Students are also expected to use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.

Knowledge - By the end of this unit, students will know:

- How to determine if a chemical reaction has occurred.
- How atoms can rearrange and combine to form new substances.
- Key, easily observable properties of chemical substances.
- That properties of substances may change during a chemical reaction.
- That total mass in a reaction must be conserved.
- That some reactions can absorb energy.
- That some reactions can release energy.
- That heat is transferred from an object at higher temperature to an object at lower temperature.
- That heat transfer stops when the objects reach the same temperature.

Skills - By the end of this unit, students will be able to:

- Describe observable cues that a chemical reaction has occurred.
- Distinguish between chemical substances based on observable properties.
- Develop an atomic level model to explain how atoms rearrange to form new substances during a chemical reaction.
- Distinguish between reactions that absorb energy and reactions that release energy.
- Explain when heat will transfer between two objects and in which direction the heat will flow.

Essential Question:

- How do chemical reactions rearrange matter and energy, and what determines the properties and behavior of the substances involved?

NJSLS - Science Standards:

- **MS-PS1-2** - Analyze and interpret data on the properties of substances before and after the substances interact to determine if a

chemical reaction has occurred.

- **MS-PS1-3** - Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
- **MS-PS1-4** - Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed
- **MS-PS1-5** - Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.
- **MS-PS1-6** - Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.

Interdisciplinary Connections: RI.CR.7.1, W.WR.7.5, W.SE.7.6, SL.PI.7.4, 7.EE.3

Career Readiness, Life Literacies, and Key Skills: 9.4.8.CT.2, 9.4.8.CI.3, 9.4.8.CI.4, 9.4.8.CT.3

Computer Science and Design Thinking: 8.1.8.IC.1, 8.1.8.DA.3, 8.2.8.ITH.2, 9.4.8.DC.1, 9.4.8.IML.1, 9.4.8.IML.3

Career Education: 9.2.8.CAP.10

Overview of Activities	Core Resources	Supplemental Materials	Technology Infusion
● Chemical Reactions Classwork/Homework ● Lab 1: Classifying Reactions ● Lab 2: Atomic Rearrangement ● Lab 3: Temperature and Thermal Energy ● Lab 4: Energy Transfer	● Chemical Reactions Classwork/Homework Answers Guide ● Chemical Reactions SMART Notebook Notes ● NJCTL.com ● Legends of Learning ● Edpuzzle ● Chemical Reactions Pacing Guide	● Chemical Reactions SMART Notebook Notes ● Chemical Reactions Classwork/Homework ● Labs	● SMARTboard Applications ● Google Applications ● Legends of Learning ● Edpuzzle

Assessments	
Formative Assessments ● Daily Science Starters ● Daily/Weekly Classwork & Homework Completion ● Kahoot! ● Rubric-for projects	Summative Assessments ● Quiz 1 - Physical and Chemical Changes ● Quiz 2 - Conservation of Mass ● Quiz 3 - Types of Energy and Energy Changes ● Quiz 4 - Thermal Energy and Temperature

Self-reflection	Test - Chemical Reactions Test
Benchmark Assessments District-assigned Benchmark Assessments (e.g. LinkIt, literacy screeners, content-specific benchmarks)	Alternative Assessments - Alternative Choice Projects - Oral Assessments

Differentiation			
Special Education	MLL	At Risk	Gifted and Talented
- Teacher's aide will read to the students as needed - Students can type or speech to text notes. - The students will be given study guides for tests - Students will be given notes for quizzes - Projects will be modified for students who need it to be. - Homework is also modified for those students who need it. - Students will be given extra time to complete all assignments. - All quizzes and tests have been modified for the students to meet their needs. - Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. - Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids;	- Provide MLL students with multiple literacy strategies. - Rosetta Stone - Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. - Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). - Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. - Translate printed communications for parents in native language	- Teacher's aide will read to the students as needed - Students can type or speech to text notes. - Students will be given extra time to complete all assignments. - Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. - Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). - Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding. - Make modifications to instructional plans based on I and RS Plan.	- Allow students to provide additional support for students struggling (peer teaching) - Expanded learning projects to further student understanding - Student teaching lessons - Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. - Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). - Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to

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pictures, illustrations, graphs, charts, data tables, multimedia, modeling). • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding. • Use project-based science learning to connect science with observable phenomena. • Structure the learning around explaining or solving a social or community-based issue. • Collaborate with after-school programs or clubs to extend learning opportunities.	• Hold conferences with translator present • Review Special Education listing for additional recommendations		demonstrate their understandings. • Use project-based science learning to connect science with observable phenomena. • Promote self-initiated and self-directed learning and growth. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.
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Marking Period	2	Unit Title	Structure, Function, and Information Processing & Body Systems	Pacing	30 days
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Unit Summary: Students demonstrate age-appropriate abilities to plan and carry out investigations to develop *evidence* that living organisms are made of cells. Students gather information to support explanations of the relationship between structure and function in cells. They are able to communicate an understanding of cell theory and understand that all organisms are made of cells. Students understand that special structures are responsible for particular functions in organisms. They then are able to use their understanding of cell theory to develop and use physical and conceptual models of cells. The crosscutting concepts of *scale, proportion, and quantity* and *structure and function* provide a framework for understanding the disciplinary core ideas. Students are expected to demonstrate proficiency in *planning and carrying out investigations*, *analyzing and interpreting data*, and *developing and using models*. Students are also expected to use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.

Students develop a basic understanding of the role of cells in body systems and how those systems work to support the life functions of the organism. Students will construct explanations for the interactions of systems in cells and organisms. Students understand that special structures are responsible for particular functions in organisms, and that for many organisms, the body is a system of multiple-interaction subsystems that form a hierarchy, from cells to the body. Students construct explanations for the interactions of systems in cells and organisms and for how organisms gather and use information from the environment. The cross cutting concepts of *systems and system models* and *cause and effect* provide a framework for understanding the disciplinary core ideas. Students are expected to demonstrate proficiency in *engaging in argument from evidence* and *obtaining, evaluating, and communicating information*. Students use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.

Knowledge - By the end of this unit, students will know:

- All living things are made up of cells, which is the smallest unit that can be said to be alive.
- An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular).
- Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell.
- In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.
- Cells form tissues, which form organs, which form systems.
- Sensory receptors send messages to our brain.

Skills - By the end of this unit, students will be able to:

- Determine whether something is living or nonliving.
- Explain how cells are the building blocks of life.
- Build models of both a plant and animal cell and be able to demonstrate key characteristics that define both.
- Describe how multicellular subsystems interact and work together to form tissue and organs that are specialized to particular body functions.
- Explain the similarities and differences between a chicken wing and a human arm.
- Explain how our brain receives messages.

Essential Questions:

- How do the structures and functions of cells work together to support life and allow organisms to interact with their environment?

NJSLS - Science Standards:

- **MS-LS1-1** - Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different types of cells.
- **MS-LS1-2** - Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.
- **MS-LS1-3** - Use arguments supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.
- **MS-LS1-8** - Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

Interdisciplinary Connections: RI.CR.7.1, W.WR.7.5, W.SE.7.6, SL.PI.7.4, 6.EE.C.9

Career Readiness, Life Literacies, and Key Skills: 9.4.8.CT.2, 9.4.8.CI.3, 9.4.8.CI.4, 9.4.8.CT.3

Computer Science and Design Thinking: 8.2.8.ED.2, 8.2.8.ITH.2, 9.4.8.IML.1, 9.4.8.IML.2

Career Education: 9.2.8.CAP.10

Overview of Activities	Core Resources	Supplemental Materials	Technology Infusion
• Structure, Function, and Information Processing & Body Systems Classwork/Homework • Lab 1: Investigating Cells • Lab 2: Build an Organ • Lab 3: Can You Trust Your Senses	• Structure, Function, and Information Processing & Body Systems Classwork/Homework Answers Guide • Structure, Function, and Information Processing & Body	• Structure, Function, and Information Processing & Body Systems SMART Notebook	• SMARTboard Applications • Google Applications • Legends of Learning

	Systems SMART Notebook Notes • NJCTL.com • Legends of Learning • Edpuzzle • Structure, Function, and Information Processing & Body Systems Pacing Guide	Notes • Structure, Function, and Information Processing & Body Systems Classwork/Homework • Labs	• Edpuzzle
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Assessments	
Formative Assessments • Daily Science Starters • Daily/Weekly Classwork & Homework Completion • Kahoot! • Rubric-for projects • Self-reflection	Summative Assessments • Quiz 1 - Cell Structure and Function • Quiz 2 - Tissues, Organs and Organ Systems • Quiz 3 - Information Processing • Test - Structure, Function and Information Processing Test
Benchmark Assessments • District-assigned Benchmark Assessments (e.g. LinkIt, literacy screeners, content-specific benchmarks)	Alternative Assessments • Alternative Choice Projects • Oral Assessments

Differentiation			
Special Education	MLL	At Risk	Gifted and Talented
• Teacher's aide will read to the students as needed • Students can type or speech to text notes. • The students will be given study guides for tests • Students will be given notes for quizzes	• Provide MLL students with multiple literacy strategies. • Rosetta Stone • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to	• Teacher's aide will read to the students as needed • Students can type or speech to text notes. • Students will be given extra time to complete all assignments. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.	• Allow students to provide additional support for students struggling (peer teaching) • Expanded learning projects to further student understanding • Student teaching lessons • Structure lessons around questions that are authentic, relate to students' interests,

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• Projects will be modified for students who need it to be. • Homework is also modified for those students who need it. • Students will be given extra time to complete all assignments. • All quizzes and tests have been modified for the students to meet their needs. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding. • Use project-based science learning to connect science with observable phenomena.	share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Translate printed communications for parents in native language • Hold conferences with translator present • Review Special Education listing for additional recommendations	• Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding. • Make modifications to instructional plans based on I and RS Plan.	social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Use project-based science learning to connect science with observable phenomena. • Promote self-initiated and self-directed learning and growth. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.
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• Structure the learning around explaining or solving a social or community-based issue. • Collaborate with after-school programs or clubs to extend learning opportunities.			
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Marking Period	3	Unit Title	Organization for Matter and Energy Flow in Organisms	Pacing	30 days
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Unit Summary: Students provide a mechanistic account for how cells provide a structure for the plant process of photosynthesis in the movement of matter and energy needed for the cell. Students use conceptual and physical models to explain the transfer of energy and cycling of matter as they construct explanations for the role of photosynthesis in cycling matter in ecosystems. They construct scientific explanations for the cycling of matter in organisms and the interactions of organisms to obtain matter and energy from an ecosystem to survive and grow. They understand that sustaining life requires substantial energy and matter inputs, and that the structure and functions of organisms contribute to the capture, transformation, transport, release, and elimination of matter and energy. The crosscutting concepts of *matter and energy* and *structure and function* provide a framework for understanding of the cycling of matter and energy flow into and out of organisms. Students are also expected to demonstrate proficiency in *developing and using models*. Students use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.

Knowledge - By the end of this unit, students will know:

- Photosynthesis uses carbon dioxide and water to store the energy of water in plants. It creates glucose and releases oxygen as a waste product.
- Photosynthesis gets its energy from the sun and occurs in the chloroplast of plants.
- Cellular respiration is the opposite of Photosynthesis. It releases the energy stored in glucose by combining it with oxygen to give off energy and releases carbon dioxide and water as waste products. This occurs in the mitochondria.
- These two cycles are a system that helps keep many organisms on Earth alive.

Skills - By the end of this unit, students will be able to:

- Model the processes of Photosynthesis and Cellular Respiration.
- Explain that the energy to power photosynthesis comes from the sun.
- Construct a scientific explanation based on evidence for the role of photosynthesis in cycling matter and flow of energy in organisms.
- Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

Essential Questions:

- How do photosynthesis and cellular respiration work together to cycle energy and matter through living organisms?

NJSLS - Science Standards:

- **MS-LS1-6** - Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
- **MS-LS1-7** - Develop a model to describe how food is rearranged through chemical reactions to forming new molecules that support growth and/or release energy as this matter moves through an organism.

Interdisciplinary Connections: RI.CR.7.1, W.WR.7.5, W.SE.7.6, SL.PI.7.4, 6.EE.A.3

Career Readiness, Life Literacies, and Key Skills: 9.4.8.CT.2, 9.4.8.CI.3, 9.4.8.CI.4, 9.4.8.CT.3

Computer Science and Design Thinking: 8.2.8.ED.2, 9.4.8.DC.1

Career Education: 9.2.8.CAP.10

Overview of Activities	Core Resources	Supplemental Materials	Technology Infusion
● Organization for Matter and Energy Flow in Organisms Classwork/Homework ● Lab 1: Investigating Photosynthesis Lab ● Lab 2: Set Sail for the Island of Photosynthesis ● Lab 3: Cellular Respiration Molecular Model ● Photosynthesis and Cellular Respiration Project	● Organization for Matter and Energy Flow in Organisms Classwork/Homework Answers Guide ● Organization for Matter and Energy Flow in Organisms SMART Notebook Notes ● NJCTL.com ● Legends of Learning ● Edpuzzle ● Organization for Matter and Energy Flow in Organisms Pacing Guide	● Organization for Matter and Energy Flow in Organisms SMART Notebook Notes ● Organization for Matter and Energy Flow in Organisms Classwork/Homework ● Labs	● SMARTboard Applications ● Google Applications ● Legends of Learning ● Edpuzzle

Assessments**Formative Assessments**

- Daily Science Starters
- Daily/Weekly Classwork & Homework Completion
- Kahoot!
- Rubric-for projects

Summative Assessments

- Quiz 1 - Photosynthesis
- Quiz 2 - Cellular Respiration
- Test - Organization for Matter and Energy Flow in Organisms Test

Self-reflection	
Benchmark Assessments District-assigned Benchmark Assessments (e.g. LinkIt, literacy screeners, content-specific benchmarks)	Alternative Assessments - Alternative Choice Projects - Oral Assessments

Differentiation			
Special Education	MLL	At Risk	Gifted and Talented
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Marking Period	3-4	Unit Title	Growth and Development of Organisms	Pacing	30 days
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Unit Summary: Students use data and conceptual models to understand how the environment and genetic factors determine the growth of an individual organism. They connect this idea to the role of animal behaviors in animal reproduction and to the dependence of some plants on animal behaviors for their reproduction. Students provide evidence to support their understanding of the structures and behaviors that increase the likelihood of successful reproduction by organisms. The crosscutting concepts of *cause and effect* and *structure and function* provide a framework for understanding the disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *analyzing and interpreting data*, *using models*, *conducting investigations*, and *communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Knowledge - By the end of this unit, students will know:

- The stages of mitosis.
- Simple meiosis.
- Land and aquatic fertilization strategies.
- Asexual and sexual reproduction.
- How behavior effects survival and reproduction.
- Animal parenting methods.
- Flower structure.
- How the environment effects growth and reproduction.
- Reproductive success is measured in the number of offspring which survive to reproduce.

Skills - By the end of this unit, students will be able to:

- Show the order of mitosis given pictures, name the function of mitotic structures.
- Differentiate between animal types and reproductive strategies.
- Identify extreme structures for attracting mates.
- Identify behaviors which enhance reproductive success.
- Differentiate between aquatic and land fertilization and development of young.
- Compare parenting styles of animals.
- Compare pollination types.

Essential Questions:

- How do organisms grow, survive, and reproduce in response to their genetics, behaviors, and environment?

NJSLS - Science Standards:

- **MS-LS1-4** - Use an argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants.
- **MS-LS1-5** - Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
- **MS-LS3-2** - Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.

Interdisciplinary Connections: RI.CR.7.1, W.WR.7.5, W.SE.7.6, SL.PI.7.4, 6.SPA.2, 6.SP.B.4

Career Readiness, Life Literacies, and Key Skills: 9.4.8.CT.2

Computer Science and Design Thinking: 8.2.8.ED.2, 8.2.8.ITH.2, 9.4.8.IML.1, 9.4.8.IML.3, 9.4.8.IML.14

Career Education: 9.2.8.CAP.10

Overview of Activities	Core Resources	Supplemental Materials	Technology Infusion
● Growth and Development of Organisms Classwork/Homework ● Lab 1: Yeast Budding ● Lab 2: Vegetative Propagation ● Lab 3: Pollen Observation ● Lab 4: Flower Dissection	● Growth and Development of Organisms Classwork/Homework Answers Guide ● Growth and Development of Organisms SMART Notebook Notes ● NJCTL.com ● Legends of Learning ● Edpuzzle ● Growth and Development of Organisms Pacing Guide	● Growth and Development of Organisms SMART Notebook Notes ● Growth and Development of Organisms Classwork/Homework ● Labs	● SMARTboard Applications ● Google Applications ● Legends of Learning ● Edpuzzle

Assessments	
Formative Assessments ● Daily Science Starters ● Daily/Weekly Classwork & Homework Completion	Summative Assessments ● Quiz 1 - Cell Division ● Quiz 2 - Reproduction

• Kahoot! • Rubric-for projects • Self-reflection	• Quiz 3 - Animal Behavior and Reproduction • Quiz 4 - Plant Reproduction • Test - Growth and Development of Organisms Test
Benchmark Assessments • District-assigned Benchmark Assessments (e.g. LinkIt, literacy screeners, content-specific benchmarks)	Alternative Assessments • Alternative Choice Projects • Oral Assessments

Differentiation			
Special Education	MLL	At Risk	Gifted and Talented
• Teacher's aide will read to the students as needed • Students can type or speech to text notes. • The students will be given study guides for tests • Students will be given notes for quizzes • Projects will be modified for students who need it to be. • Homework is also modified for those students who need it. • Students will be given extra time to complete all assignments. • All quizzes and tests have been modified for the students to meet their needs. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide students with multiple choices for how they can	• Provide MLL students with multiple literacy strategies. • Rosetta Stone • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.	• Teacher's aide will read to the students as needed • Students can type or speech to text notes. • Students will be given extra time to complete all assignments. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding. • Make modifications to instructional plans based on I and RS Plan.	• Allow students to provide additional support for students struggling (peer teaching) • Expanded learning projects to further student understanding • Student teaching lessons • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to

*Amistad ^Holocaust #Climate Change ()DEI +LGBTQ @AAPI

represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding. • Use project-based science learning to connect science with observable phenomena. • Structure the learning around explaining or solving a social or community-based issue. • Collaborate with after-school programs or clubs to extend learning opportunities.	• Translate printed communications for parents in native language • Hold conferences with translator present • Review Special Education listing for additional recommendations		demonstrate their understandings. • Use project-based science learning to connect science with observable phenomena. • Promote self-initiated and self-directed learning and growth. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.
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Marking Period	4	Unit Title	Inheritance and Variation of Traits	Pacing	30 days
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Unit Summary: Students develop and use models to describe how gene mutations and sexual reproduction contribute to genetic variation. Students understand how genetic factors determine the growth of an individual organism. They also demonstrate understanding of the genetic implications of sexual and asexual reproduction. The crosscutting concepts of *cause and effect* and *structure and function* provide a framework for understanding how gene structure determines differences in the functioning of organisms. Students are expected to demonstrate proficiency in *developing and using models*. Students use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.

Knowledge - By the end of this unit, students will know:

- How to properly use a Punnett Square.
- Your traits are determined by the dominant and recessive alleles passed to you from your parents.
- The difference between genotype and phenotype and how phenotype depends on genotype.
- How to perform a test cross to determine the unknown genotype of an organism.
- Why a person may end up being born with a birth defect or disease.

Skills - By the end of this unit, students will be able to:

- properly complete a Punnett Square and use it to predict the genes of offspring.
- use an organism's genotype to describe the physical characteristics of the object.
- properly perform test crosses to determine an unknown genotype.
- demonstrate appropriate research skills and teach the class about birth defects and genetic mutations.

Essential Questions:

- How are traits passed from parents to offspring, and what factors influence genetic variation?

NJSLS - Science Standards::

- **MS-LS3-1** - Use an argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants
- **MS-LS3-2** - Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation
- **MS-LS4-5** - Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.

Interdisciplinary Connections: RI.CR.7.1, W.WR.7.5, W.SE.7.6, SL.PI.7.4, 6.SP.B.5

Career Readiness, Life Literacies, and Key Skills: 9.4.8.CT.2, 9.4.8.CI.3, 9.4.8.CI.4, 9.4.8.CT.3

Computer Science and Design Thinking: 8.2.8.ED.2, 8.2.8.ITH.2, 9.4.8.IML.1, 9.4.8.IML.3, 9.4.8.TL.3

Career Education: 9.2.8.CAP.10

Overview of Activities	Core Resources	Supplemental Materials	Technology Infusion
- Inheritance and Variation of Traits Classwork/Homework - Lab 1: Mendel's Peas - Lab 2: Dragon Crossing - Lab 3: Jane and John Activity - Lab 4: Genetic Mutations	- Inheritance and Variation of Traits Classwork/Homework Answers Guide - Inheritance and Variation of Traits SMART Notebook Notes - NJCTL.com - Legends of Learning - Edpuzzle - Inheritance and Variation of Traits Pacing Guide	- Inheritance and Variation of Traits SMART Notebook Notes - Inheritance and Variation of Traits Classwork/Homework - Labs	- SMARTboard Applications - Google Applications - Legends of Learning - Edpuzzle

Assessments	
Formative Assessments - Daily Science Starters - Daily/Weekly Classwork & Homework Completion - Kahoot! - Rubric-for projects - Self-reflection	Summative Assessments - Quiz 1 - Mendelian Genetics and Punnett Squares - Project - Genetic Mutations - Test - Inheritance and Variation of Traits Test
Benchmark Assessments District-assigned Benchmark Assessments (e.g. LinkIt, literacy screeners, content-specific benchmarks)	Alternative Assessments - Alternative Choice Projects - Oral Assessments

Differentiation			
Special Education	MLL	At Risk	Gifted and Talented
- Teacher's aide will read to the students as needed - Students can type or speech to text notes. - The students will be given study guides for tests - Students will be given notes for quizzes - Projects will be modified for students who need it to be. - Homework is also modified for those students who need it. - Students will be given extra time to complete all assignments. - All quizzes and tests have been modified for the students to meet their needs. - Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. - Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). - Provide multiple grouping opportunities for students to share their ideas and to encourage work among various	- Provide MLL students with multiple literacy strategies. - Rosetta Stone - Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. - Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). - Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. - Translate printed communications for parents in native language - Hold conferences with translator present - Review Special Education listing for additional recommendations	- Teacher's aide will read to the students as needed - Students can type or speech to text notes. - Students will be given extra time to complete all assignments. - Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. - Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). - Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding. - Make modifications to instructional plans based on I and RS Plan.	- Allow students to provide additional support for students struggling (peer teaching) - Expanded learning projects to further student understanding - Student teaching lessons - Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. - Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). - Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. - Use project-based science learning to connect science with observable phenomena. - Promote self-initiated and self-directed learning and growth.

backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding. • Use project-based science learning to connect science with observable phenomena. • Structure the learning around explaining or solving a social or community-based issue. • Collaborate with after-school programs or clubs to extend learning opportunities.			• Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.
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