

SUMMER SCHOOL TEACHER GUIDE



Science/ 7th Grade

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Summer School Curriculum Guide

The Elementary and Middle Summer School Program will be for 20 days. Students will have a total of 18 daily lessons and day 19 and 20 will be for reviewing lessons/quizzes and post-test.

- Eighteen (18) days of daily lessons
- One (1) day post-test review and post-test
- One (1) day of reviewing lessons, retake daily post-tests, and makeup missed lessons.

All students and staff will use Grade Results for their summer curriculum. Each lesson will open daily, and students will not be able to work ahead; however, students can work on previously opened lessons. Students can retake a daily post-test 3 times before it locks. If a student needs to retake a daily lesson post-test for a 4th time, then the teacher will have to open the lesson post-test again. Teachers should not delete any prior lesson post-test. Grade Results will post the highest grade from each students' lesson post-test.

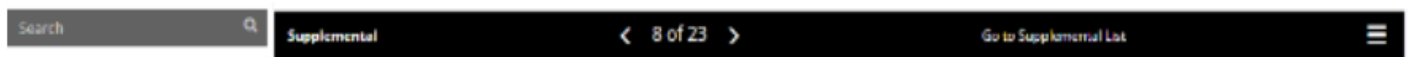
MS Classroom Schedule – Time below is an *approximate* breakdown of time.

- **Attendance in PowerSchool** – 5 minutes
- **Lesson Introduction (I Do)** – 5 minutes
- **Lesson Activities/Supplemental (We Do)** – 60 minutes
- **Break** – 10 Minutes (*Site Administrator will work with teachers on breaks*)
- **Teacher Lesson Review** – 5 minutes
- **Independent Work** – Student Lesson Review*/Post-test (They Do) – 40 minutes
- **Closing/Wrap Up** – 5 minutes
- **Total Time: 2 hours 10 minutes**

***Lesson Review** – Students will review lesson for essential knowledge/information prior to the daily test.

The following will be used within **Grade Results**:

- **Lessons** with Content Area, Videos, and Activities
- **Supplemental** Teacher Resources:
 - o Click on Supplemental
 - o Click on Resource to view (Example: Flocabulary, BrainPOP, Others)
 - o Teacher will review with the students the items that need to be completed.
 - o Teachers can select additional Supplemental Resources as needed if time permits.
 - o To view another resource once you are in a resource, use the Toggle Sidebar in the top right-hand corner. It has three dashes. An example is listed below.



- **Post-Test** – Each lesson will have a daily post-test.

Graded Work – The Post-Test will be the daily graded work. Graded work is automatically calculated by the Grade Results Software.

Anchor Charts – Some subjects may have Anchor Charts available with their lesson.

Summer School Lesson Plan

Subject/Grade: Science/7th Grade

Day: 1

Topic/Lesson Title & Grade Results #: Lesson 1: Physical and Chemical Properties

Objective(s): Students will

- Discuss the states of matter.
- Describe the physical properties of substances.
- Define extensive and intensive properties.
- Explain the chemical properties of substances.

Guiding Question(s): What are the physical and chemical properties of matter?

TN Curriculum Standard(s): 7.PS1.5 Use the periodic table as a model to analyze and interpret evidence relating to physical and chemical properties to identify a sample of matter.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Boiling point:** The temperature at which a liquid change into gas at standard atmospheric pressure.
- **Condensation:** A process in which a gas is converted into a liquid.
- **Conductivity:** The ability of an object to conduct heat or electricity.
- **Density:** The mass per unit volume of an object.
- **Ductility:** The ability of an object to be drawn into wires from thin sheets or rods without fracturing.
- **Elasticity:** The ability of a body to return to its original shape after being deformed.
- **Evaporation:** A process in which a liquid is converted into its gaseous state.
- **Extensive properties:** Properties that depend upon the amount of matter present.
- **Freezing point:** The temperature at which the liquid form of a substance changes to its solid form at standard pressure.
- **Intensive properties:** Properties that do not depend upon the amount of matter present.

- **Length:** Measurement of an object from one end to the other end.
- **Malleability:** The ability of an object to be deformed by compression, usually into a sheet form, without breaking.
- **Mass:** Quantity of matter in an object.
- **Matter:** Physical substances that have mass and occupy space.
- **Melting point:** The temperature at which the solid form of a substance changes to its liquid form at standard atmospheric pressure.
- **Physical properties:** Properties that can be measured without changing the composition of the matter.
- **SI unit:** A series of units set in 1960, in an international committee of scientists, meant to update the metric system. They are called SI units, from the French "System International" or the international systems of units.
- **Solubility:** The ability of a solute to dissolve in a solvent.
- **Solute:** A substance that dissolves in another substance.
- **Solution:** A homogenous mixture composed of two or more substances, where one is the solvent, and the others are the solutes.
- **Solvent:** A substance that is capable of dissolving another substance in it, resulting in a solution.
- **Vaporization:** A process in which a solid or a liquid is converted into a vapor state.
- **Viscosity:** The resistance of a fluid to flow.
- **Volume:** Amount of space occupied by an object.
- **Weight:** Force of gravity acting on an object.

TAKE ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins). The teacher will use the instructional material located in Grade Results to explain physical and chemical properties of matter. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the "Learning Tools" toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 2. Introduction**
- **Slide 3. Physical Properties of matter**
- **Slide 4. Intensive properties**
- **Slide 5. Chemical properties of matter**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 1 activities. Vocabulary words and their meanings are listed above and on slide 8 in Grade Results.

Lesson Activities (We Do) (45 min):

As a whole group, complete the following Activities and Discuss.

- **Slide 6: Physical and Chemical Properties**
- **Discuss the animations that are embedded within the lesson. Animations are located on slide 4.**
- **Watch and Discuss Supplemental videos.**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Page 2 Safari video: Matter's Mass, Weight, Volume and Density (6 mins 20 sec)**
- **Page 3 Safari video: Properties of Elements (52 sec)**
- **Page 4 Safari video: Physical & Chemical Changes (3 min)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: (15 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

Slide 7

- Matter is a physical substance that has mass and occupies space.
- Physical properties of matter are properties that can be measured without changing the composition of the matter.
- A gas converts to plasma when the gas is heated until its atoms lose their electrons. A hot, ionized gas contains the same number of positive ions and negatively-charged electrons.
- An extensive property depends upon the amount of matter present.
- Intensive properties do not depend upon the amount of matter present.
- Conductivity is the ability of an object to conduct heat or electricity.
- Viscosity always decreases when the temperature increases.
- Chemical properties are the properties that can be observed when matter undergoes a change in its composition.
- Electrolysis is a process of separating a compound into its constituents by passing an electric current through its solution or melted state.
- The pH of a solution is the negative logarithm of the molar concentration of hydrogen ions in the solution.

Independent Work – Posttest (They Do) (30 min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th Grade

Day: 2

Topic/Lesson Title & Grade Results #: Lesson 2: Particle Motion and Phase Changes

Objective(s): Students will

- Describe the motion of particles in different states of matter.
- Explain the changes occurring in states of matter.
- Determine the boiling point, melting point, triple point, and critical point using a phase diagram.

Guiding Question(s): How do particles in solids, liquids, and gases move?

TN Curriculum Standard(s): 7.PS1.6 Create and interpret models of substances whose atoms represent the states of matter with respect to temperature and pressure.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

Technology: Computer, Whiteboard, TEAMs meeting (if applicable)

Key Vocabulary/Terms:

- **Boiling point:** The temperature at which a substance changes from a liquid to the gaseous state.
- **Condensation:** Change from gaseous state to liquid state.
- **Critical temperature:** The point above which vapor cannot be condensed.
- **Evaporation:** Change from liquid state to gaseous state without boiling.
- **Freezing point:** The temperature at which a substance changes from a liquid to a solid.
- **Freezing:** Change from liquid state to solid state.
- **Matter:** Anything that has mass and volume.
- **Melting point:** The temperature at which a substance changes from a solid state to a liquid state.
- **Melting:** Change from solid state to liquid state.
- **Phase diagram:** A graph that gives the temperature and pressure at which a substance exists as solid, liquid, and gas.
- **Phase:** A portion of a system that has uniform physical and chemical characteristics.
- **Sublimation:** Change from solid state directly to gaseous state.
- **Temperature:** A measure of the average kinetic energy of the particles in a substance.

- **Triple point:** The point where all the three basic physical phases of a matter, i.e., solid, liquid, and gas, coexist in equilibrium.
- **Vaporization:** Change from liquid state to gaseous state.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20mins):

The teacher will use the instructional material located in Grade Results to explain particle motion. The teacher will focus on the states of matter (solid, liquid, and gas) and how particles move between each phase. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 2 activities. Vocabulary words and their meanings are listed above and on slide 18 in Grade Results.

Lesson Activities (We Do) (50 min):

As a whole group, watch videos, complete the Practice Activities. Discuss.

- **Slide 3: Video States of Matter**
- **Slide 4: States of Matter**
- **Slide 5: Solids, Liquids, and Gases**
- **Slide 6: The arrangement of particles in Solids, liquids, and Gases**
- **Slide 7: Video – The arrangement of particles in Solids, liquids, and Gases**
- **Slide 8: Activity - The Arrangement of Particles in Solids, Liquids, and Gases**
- **Slide 9: Activity - Solids, Liquids, and Gases**
- **Slide 10: Phase changes**
- **Slide 11: Video – Phase Changes**
- **Slide 12: Activity - Phases Changes**
- **slide 13: Phase Diagram**
- **Slide 14: Activity - Boiling Point**
- **Slide 15: Video – Phase Diagram**
- **Slide 16: Activity - Phase Diagram**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab

- **Page 1 Flocabulary: States of Matter (4min 5sec)**
- **Page 2 Learn 360 video: Solids, Liquids, Gases (18min 40sec)**

Additional Teacher Resources: None

Break (10mins)

Lesson Review: (10mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

Slide 17

- Matter is anything that has mass and volume.

- Matter exists in different states such as solid, liquid, and gas.
- Ice, water, and water vapor are the three different states of the same substance.
- Phase change is the change in the physical state of a system without any change in the composition of the system.
- During phase change, heat is either given out or absorbed by the sample.
- Matter can change from one state to another by heating or cooling.
- Phase diagrams show the phases of a substance at various temperatures and pressures.
- Phase diagram presents the triple point, sublimation curve, vaporization curve, the melting curve, and critical temperature and pressure.

Independent Work – Posttest (They Do) (30min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th Grade

Day: 3

Topic/Lesson Title & Grade Results #: Lesson 3: Elements, Compounds, and Mixtures

- **Objective(s): Students will**
- Explain the classification of matter.
- Classify element, compound, and mixture.
- Identify a given sample as an element, a compound, or a mixture.
- Distinguish compound from mixture.

Guiding Question(s):

- **How do pure substances and mixtures compare?**

TN Curriculum Standard(s): 7.PS1.2 Compare and contrast elemental molecules and compound molecules.
7.PS1.3 Classify matter as pure substances or mixtures based on composition.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Atom:** The smallest basic unit of an element.
- **Chemical formula:** A chemical formula is a shorthand way to represent a substance using chemical symbols and numbers.
- **Chemical symbol:** Abbreviations used to denote a chemical element.
- **Compound:** A substance formed by joining two or more atoms, either similar or different.
- **Element:** A substance that contains only one type of atom.
- **Heterogeneous mixture:** A mixture with a nonuniform composition.
- **Homogeneous mixture:** A mixture with a uniform/same composition.
- **Matter:** Anything that has mass and volume.
- **Mixture:** A combination of two or more substances that are not chemically joined.
- **Molecule:** The smallest particle of a compound composed of chemically joined atoms.
- **Solution:** A homogeneous mixture of two or more substances in a single phase.

- **Substance:** A type of matter with a fixed composition.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20mins):

The teacher will use the instructional material located in Grade Results to explain elements, compounds, and mixtures. The teacher will focus on explaining what makes an element different from a compound. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 4: Elements**
- **Slide 5: Chemical symbols and Formulas**
- **Slide 6: Video – Symbols for Elements**
- **Slide 7: Compounds**
- **Slide 8: Properties of Compounds**
- **Slide 9: Mixtures**
- **Slide 10: Homogeneous mixture**
- **Slide 11: Heterogeneous mixture**
- **Slide 12: Differences: Mixtures and Compounds**
- **Slide 13: Video – Elements, Compounds, and Mixtures**
- **Slide 14: Matter classification (Flowchart)**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 2 activities. Vocabulary words and their meanings are listed above as well as on slide 18 in Grade Results.

Lesson Activities (We Do) (50 min):

As a whole group, complete the Practice Activities. Discuss.

- **Slide 3: Pairing Activity**
- **Slide 15: Drag and Drop Activity**
- **Slide 16: Labeling Activity**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Page 1: Mixtures and Compounds (3 mins 11 sec)**
- **Page 2: Element Song (3 min 47 sec)**
- **Page 3: Mixtures and Compounds (3 min 41 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review Slide 17: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- Based on the chemical composition and properties, the matter is classified into pure substances and mixtures.
- A pure substance is a type of matter with a fixed composition and constant properties.
- Pure substances are further classified into elements and compounds.
- Elements are the simplest substances, made up of only one kind of atom.
- Elements are further classified into metals, nonmetals, and metalloids, and are organized in the periodic table.
- Elements exist as either isolated atoms or molecules and cannot be broken into a simpler type of matter.
- Elements can be identified using both their physical and chemical properties.
- A compound is a pure substance formed by the chemical combination of two or more elements in a fixed proportion.
- Compounds are classified into ionic and covalent, based on the types of bonds holding their atoms together.
- The components of a compound cannot retain their individual properties.
- Compounds can be broken down into their constituent elements using chemical change.
- The chemical formula is a symbolic representation of elements and compounds using symbols of elements.
- A mixture is the physical combination of two or more substances.
- Mixtures are further classified into homogeneous and heterogeneous mixtures.
- A homogeneous mixture has a uniform composition.
- A heterogeneous mixture does not have a uniform composition.

Independent Work – Posttest (They Do) (30 min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th

Day: 4

Topic/Lesson Title & Grade Results #: Lesson 4: Chemical Reactions and Conservation of Mass

Objective(s): Students will

- List down the different types of reactions.
- Illustrate the law of conservation of mass.
- Explain the steps for balancing equations.

Guiding Question(s): How are chemical reactions modeled?

TN Curriculum Standard(s): 7.PS1.4 Analyze and interpret chemical reactions to determine if the total number of atoms in the reactants and products support the Law of Conservation of Mass.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Addition reaction:** A chemical reaction in which one or more molecules are added to each other to form a new compound.
- **Balancing Chemical Equations:** A chemical reaction is described by a balanced equation in which each side of the equation has the same number of atoms of each element indicating that mass is conserved.
- **Chemical Equation:** Represents a chemical reaction with the help of symbols and formulas of its reactants and products.
- **Chemical formula:** Representation of a molecule in terms of symbols of its constituent elements along with numbers indicating the number of atoms of the corresponding elements present in it.
- **Chemical reaction:** A process that brings about a change in the chemical composition of a substance.
- **Combustion reaction:** A chemical reaction in which a substance combines with oxygen and gives products and energy in the form of heat and light.
- **Decomposition reaction:** A chemical reaction that results in the breakdown of a compound into simpler substances.
- **Double replacement reaction:** A chemical reaction in which the cation of one compound combines with the anion of another compound.
- **Law of conservation of mass:** Matter can neither be created nor be destroyed. In a chemical reaction, the total mass of reactants is equal to the total mass of products.

- **Precipitate:** An insoluble solid that settles down in a liquid solution.
- **Product:** A substance formed as a result of a chemical reaction.
- **Reactant:** A substance which undergoes a chemical change to give product(s).
- **Single replacement reaction:** A reaction in which a single, uncombined element replaces the cation of another compound.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins):

The teacher will use the instructional material located in Grade Results to explain chemical reactions and the law of conservation of matter. The teacher will focus on how matter is conserved within a chemical reaction. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 3: Representing Chemical Reactions**
- **Slide 5: Types of Chemical Reactions**
- **Slide 6: Video: Types of Chemical Reactions**
- **Slide 8: Law of Conservation of Mass**
- **Slide 9: Application of the Law of Conservation of Mass**
- **Slide 10: Balancing Chemical Equations**
- **Slide 11: Video: Balancing Chemical Equations**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 4 activities. Vocabulary words and their meanings are listed above as well as in Grade results on slide 14.

Lesson Activities (We Do) (50 mins):

As a whole group, complete the Practice Activities. Discuss.

- **Slide 4: Representing Chemical Reactions**
- **Slide 7: Types of Chemical Reactions**
- **Slide 12: Balancing Chemical Equations**

Supplemental: Videos: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Page 1: Describing Chemical Reactions (3 mins 40 sec)**
- **Page 2: What is the conservation of matter? (4 mins 34 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 13 (10mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- Chemical changes are processes in which substances undergo chemical reactions to form new substances.
- A *chemical reaction* is represented by using a *chemical equation*.
- A synthesis reaction is a combination of two or more substances, which results in the formation of a new compound.
- A decomposition reaction breaks down a compound into simpler substances.
- A single replacement reaction is when a single uncombined element replaces the cation of another compound.
- A double replacement reaction occurs when the cation of one compound combines with the anion of another compound.
- In a combustion reaction, a substance combines with oxygen to form carbon dioxide and water, and/or other possible products. It releases a large amount of heat.
- The French chemist Antoine Laurent Lavoisier established the law of conservation of mass.
- According to the law of conservation of mass, matter can neither be created nor be destroyed.
- In a chemical reaction, the total mass of reactants is equal to the total mass of products.
- A chemical reaction is described by a balanced equation in which each side of the equation has the same number of atoms of each element indicating that mass is conserved.

Independent Work – Posttest (They Do) (30min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review: (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th

Day: 5

Topic/Lesson Title & Grade Results #: Lesson 5: Atomic Structure

Objective(s): Students will

- Describe matter.
- Describe the nucleus and subatomic particles.
- Define mass and atomic numbers.
- Describe ions.
- Explain isotopes and average atomic mass.

Guiding Question(s): How do we know what parts make up an atom?

TN Curriculum Standard(s): 7.PS1.1 Develop and use models to illustrate the structure of atoms, including the subatomic particles with their relative positions and charge.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

Technology: Computer, Whiteboard, TEAMs meeting (if applicable)

Key Vocabulary/Terms:

- **amu:** Acronym of Atomic Mass Unit, equal to one-twelfth of the mass of an unbound atom of carbon-12 at rest and in its ground state. It is the unit used to express the mass of atoms, molecules, and ions.
- **Atom:** The smallest particle of an element that retains the properties of the element.
- **Atomic Number (Z):** The number of protons contained in the nucleus of the atom of an element.
- **Electron:** Negatively charged subatomic particle.
- **Ions:** A net electric charge on an atom or a molecule due to the loss or gain of electrons.
- **Isotopes:** Atoms of the element with same atomic number but different mass numbers.
- **Mass number (A):** The total number of protons and neutrons, i.e., the number of nucleons present in the nucleus.
- **Molecule:** A group of atoms bound together representing the fundamental unit of a compound.
- **Matter:** Any substance which has mass and occupies space.
- **Negative ion:** An ion with a negative charge formed by gaining one or more electrons.
- **Neutron:** Neutrally charged subatomic particle, located in an atom's nucleus.

- **Nucleus:** The central part of an atom, which consists of protons and neutrons.
- **Positive ion:** An ion with a positive charge formed by the removal of one or more electrons.
- **Proton:** A positively-charged subatomic particle, located in an atom's nucleus.
- **Subatomic particles:** The constituent particles of an atom.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do): (20 mins)

The teacher will use the instructional material located in Grade Results to explain the structure of an atom. The teacher will focus on the three subatomic particles and their position and charge within the atom. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 3: Subatomic particles**
- **Slide 4: Mass Number (A)**
- **Slide 5: Ions**
- **Slide 6: Isotopes**
- **Slide 7: Average Atomic Mass**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 5 activities. Vocabulary words and their meanings are listed above and on slide 10 in Grade Results.

Lesson Activities (We Do): (50 mins)

As a whole group, complete the Practice Activities. Discuss.

- **Slide 8: Drag and Drop Activity**
- **Watch and discuss videos located under the Supplemental tab.**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Flocabulary video: Atoms and Elements (2 min 23 sec)**
- **Safari video: Atomic Structure and the Periodic Table (5 min 8 sec)**
- **Safari video: Nuclear Chemistry: Inside the Atom (19 min 17 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 9 (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- Matter is composed of tiny particles called atoms.
- Atoms are composed of smaller particles called subatomic particles.
- One amu is defined as one-twelfth of the mass of an unbound atom of carbon-12 at rest.
- A neutron has a mass approximately equal to that of a proton. It has no charge and exists within the nucleus.
- The electron is the negatively charged particle of an atom. The electron has a negligible mass and orbits the nucleus of an atom.
- The nucleus of an atom is a combination of roughly equal numbers of protons and neutrons held together by a strong nuclear force.
- Mass number = Number of neutrons + number of protons
- Atomic number of an atom is the number of protons present in its nucleus.
- The atoms of the same element with different numbers of neutrons are called Isotopes.

Independent Work – Posttest (They Do) (30 min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th

Day: 6

Topic/Lesson Title & Grade Results #: Lesson 6: Major Plant and Animal Cell Organelles

Objective(s): Students will

- Describe the structure and the functions of cell organelles.
- Discuss the various plant and animal cell organelles.

Guiding Question(s): What are the different parts that make up a cell?

TN Curriculum Standard(s): 7.LS1.1 Develop and construct models that identify and explain the structure and function of major cell organelles as they contribute to the life activities of the cell and organism.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Autolysis:** Self-destruction of cells by the cell's own enzymes.
- **Cell:** The basic structural and functional unit of living organisms.
- **Cell membrane:** An envelope around the cytoplasm of a cell.
- **Cytoplasm:** The combination of cytosol (which is the liquid part of the cell) and the organelles of the cell.
- **Cytosol:** The liquid part of the cytoplasm.
- **DNA (deoxyribonucleic acid):** An abbreviation for deoxyribonucleic acid which is the inheritable genetic information molecule of the cell.
- **Endoplasmic reticulum:** A membrane network within the cytoplasm of cells.
- **Lysosome:** An organelle containing hydrolytic, degradative enzymes.
- **Mitochondria:** The cell organelle responsible for producing energy.
- **Nucleus:** A large, membrane-bound organelle containing the cell's hereditary material.
- **Nucleolus:** A small, round body of protein that is present inside a cell nucleus.
- **Organelle:** A sub-cellular structure that is present in a cell for a specific function.

- **Plasma:** The straw-colored fluid part of blood, lymph or milk, in which blood cells or fat globules are suspended.
- **Ribosome:** Tiny cytoplasmic organelle containing RNA and associated proteins that take part in protein synthesis.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins)

The teacher will use the instructional material located in Grade Results to explain the organelles located in a cell. The teacher will focus on the structure and function of each major cell organelle. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 4: Cell Membrane**
- **Slide 6: The Nucleus**
- **Slide 8: Ribosomes**
- **Slide 9: Cytoplasm**
- **Slide 11: Mitochondria**
- **Slide 13: Lysosomes**
- **Slide 14: Endoplasmic reticulum**
- **Slide 16: Golgi Apparatus**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 6 activities. The vocabulary and their meanings are listed above as well as on slide 19 in Grade Results.

Lesson Activities (We Do) (50 mins):

As a whole group, complete the Practice Activities. Discuss.

- **Slide 3: Organelle vs Category**
- **Slide 5: Cell Membrane**
- **Slide 7: The Nucleus**
- **Slide 10: Cytoplasm and Other Cell Organelles**
- **Slide 12: Mitochondria**
- **Slide 15: Endoplasmic Reticulum**
- **Slide 17: Drag and Drop Activity**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Safari video: Page 1: Eukaryotic Cells (1 min 2 sec)**
- **Safari video: Page 2: Cell Organelles (8 min 21 sec)**
- **Safari video: Page 3: Cells (21 mins 48 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 18: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson. The lesson Review is found on slide 18 in Grade Results.

- All living cells are made of cells.
- The cell membrane is double-layered and is not continuous due to the presence of pores in it.
- Nucleoplasm is a liquid present inside the nucleus, which contains chromatin and ribosomes.
- The nucleolus is not encircled with a membrane.
- The ribosomes are built of RNA and protein.
- The cytosol is the site for protein synthesis.
- The gel-like fluid inside the mitochondria that is enclosed by an outer and an inner membrane is called the matrix.
- "Suicidal bag" is another name for lysosomes.
- The main function of the endoplasmic reticulum is to operate as a transport system.
- Golgi complex was identified by an Italian physician, Camillo Golgi.

Independent Work – Posttest (They Do) (30 min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students to explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th

Day: 7

Topic/Lesson Title & Grade Results #: Lesson 7: Similarities and Difference Among Living Organisms

Objective(s): Students will

- Define the characteristics of living and non-living things.
- Discuss the classification of living organisms.
- Explain the similarities and differences between prokaryotic and eukaryotic cells.

Guiding Question(s): How are organisms classified?

TN Curriculum Standard(s): 7.LS1.3 Evaluate evidence that cells have structural similarities and differences in organisms across kingdoms.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results
Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Algae:** Aquatic eukaryotic organisms that contain primitive chlorophyll.
- **Archaeobacteria:** An extremely old (evolutionary-wise) group of bacteria which lack peptidoglycan in their cell wall.
- **Cell membrane:** An envelope around the cytoplasm of a cell.
- **Cell:** The basic structural and functional unit of living organisms.
- **Chloroplast:** A chlorophyll-containing organelle found in plant cells and some algae.
- **Chromatin:** A mass of genetic material made of nucleic acids and proteins, primarily histones.
- **Cilia:** Slender, hair-like structures projecting from the surface of the eukaryotic cells, aiding in locomotion.
- **Cyanobacteria:** A division of photosynthesizing bacteria, belonging to Eubacteria.
- **Cytoplasm:** The combination of cytosol (which is the liquid part of the cell) and the organelles of the cell.
- **Cytosol:** The liquid part of the cytoplasm.
- **DNA:** Deoxyribonucleic acid, a double-stranded, self-replicating biopolymer, carrying the genetic information of an organism.
- **Endoplasmic reticulum:** Membrane network within the cytoplasm of cells.
- **Eukaryotes:** Organisms with genetic material organized inside a membrane-bound nucleus.

- **Fungi:** A member of a large group of eukaryotic organisms that includes microorganisms such as yeast and molds.
- **Lysosome:** An organelle containing hydrolytic, degradative enzymes.
- **Mitochondria:** Cell organelles responsible for producing energy.
- **Nucleoid:** DNA concentrated in a particular region of a prokaryotic cell.
- **Nucleolus:** Small, round body of protein that is present inside a cell nucleus.
- **Nucleus:** Large, membrane-bound organelle containing the cell's hereditary material.
- **Organelle:** A sub-cellular structure that is present in a cell for a specific function.
- **Prokaryotes:** Microscopic, single-celled organisms that neither have well-developed nucleus nor cell organelles.
- **Protista:** Eukaryotic, one-celled living organisms.
- **Ribosome:** Tiny cytoplasmic organelle containing RNA and associated proteins that take part in protein synthesis.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins):

The teacher will use the instructional material located in Grade Results to explain particle motion. The teacher will focus on the states of matter (solid, liquid, and gas) and how particles move between each phase. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 3: Characteristics of Life**
- **Slide 4: Similarities among living things**
- **Slide 5: Chemical Composition**
- **Slide 6: Cell Organization**
- **Slide 7: Cell Shape and Movement**
- **Slide 8: Classification of Living things**
- **Slide 9: Classification of Organisms**
- **Slide 10: Characteristics of the six kingdoms of life**
- **Slide 12: Prokaryotic and Eukaryotic Cells**
- **Slide 13: Structure and Functions of Prokaryotic Cells**
- **Slide 14: Structure and Functions of Prokaryotic Cells (cont'd)**
- **Slide 15: Eukaryotic cells**
- **Slide 16: Plant cell organelles**
- **Slide 17: Video - The Cell Organelles**

- **Slide 18: Similarities between Prokaryotic and Eukaryotic cells**
- **Slide 19: Differences between Prokaryotic and Eukaryotic cells**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 7 activities. Vocabulary words and their meanings are listed above as well as in Grade Results on slide 23.

Lesson Activities (We Do) (50 mins):

As a whole group, complete the Practice Activities. Discuss.

- **Slide 11: Six Kingdoms of Life**
- **Slide 20: Prokaryotic and Eukaryotic Cells**
- **Slide 21: Living Organisms: Similarities and Differences**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Page 1: The Classification of Organisms (20 mins 31 sec)**
- **Page 2: Five Kingdom Classification of Organism (3 mins 49 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 22: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- All living things share seven characteristics.
- All living things are made of one or more cells.
- Living things use energy for their growth and development and to maintain their life.
- Living things maintain a fairly stable internal environment irrespective of the changes in their external environment.
- Living things reproduce organisms of the same type, and thereby pass hereditary information to the new organisms.
- All living things are made of four main elements namely carbon, hydrogen, oxygen, and nitrogen.
- Cells are the basic units of life.
- The size and shape of a cell are related to its function.
- The biological classification of all organisms is organized into "the six kingdoms of life."
- Cells are broadly classified into two types: prokaryotic and eukaryotic.
- Prokaryotes are mostly unicellular organisms.
- Eukaryotes can be either unicellular or multicellular.
- In multicellular organisms, cells with similar or coordinated functions work together and perform specific functions in the organism.

- Some organelles can be found only in plant cells, some only in animal cells. Rarely, certain organelles can be found in both plant and animal cells.
- All cells of multicellular organisms have a cell membrane, a nucleus, cytoplasm, ribosomes, mitochondria, endoplasmic reticulum (smooth and rough), peroxisomes, and Golgi apparatus.
- The organelles such as cell wall, vacuoles (smaller in animal cells), chloroplasts, and glyoximes are unique to plant cells, whereas only animal cells contain lysosomes and centrioles.

Independent Work – Posttest (They Do) (30 min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/ 7th Grade

Day: 8

Topic/Lesson Title & Grade Results #: Lesson 8: Levels of Organization: From Cell to Organism

Objective(s): Students will

- Discuss the levels of organization from cell to organism.
- Create models to show relationships between organs with related functions that make up the different organ systems.

Guiding Question(s): How are living things organized?

TN Curriculum Standard(s): 7.LS1.4 Diagram the hierarchical organization of multicellular organisms from cells to organism.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Connective tissue:** Tissue of mesodermal origin that connects, supports, binds, or separates other tissues or organs.
- **Digestive system:** The system that converts the ingested food into absorbable nutrients to keep the body functioning well.
- **Endocrine gland:** A gland in the endocrine system that secretes hormones directly into the blood stream.
- **Epithelial tissue:** Membranous tissue covering the internal organs and other internal cavities' surfaces of the body.
- **Heart:** A hollow-chambered muscular organ that pumps blood through the circulatory system by rhythmic contraction and dilation.
- **Integumentary system:** A body system composed of the skin (or cutaneous membrane) and its derivative structures, such as hair, nails, sweat, and glands.
- **Kidney:** A bean-shaped excretory organ used to filter and excrete waste and excess materials from the blood.
- **Lungs:** A pair of organs situated within the ribcage, which are the organs of respiration, presenting three lobes on the right lung and two lobes on the left lung.
- **Muscle:** A band or bundle of fibrous tissue in a human or animal body that has the ability to contract, producing movement in, or maintaining the position of, parts of the body.
- **Muscular tissue:** Animal tissue comprised predominantly of contractile cells that aid in body movement.

- **Nervous system:** A body system comprised of nerve cells and fibers that transmit nerve impulses between parts of the body.
- **Nutrients:** Source of nourishment necessary for the growth and maintenance of life.
- **Organ:** A group of tissues that performs a specific function.
- **Organelle:** A differentiated, specialized structure within a living cell having a specific function.
- **Organism:** A living thing with the skill to function mutually.
- **Sperm:** A male gamete or sex cell.
- **Tissue:** A group of cells destined to carry out a particular function.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do): (20 mins)

The teacher will use the instructional material located in Grade Results to explain the levels of organization. The teacher will focus on how each level is comprised of the previous level. All levels of organization are needed for an organism. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 3: Levels of Organization**
- **Slide 4: Cells**
- **Slide 5: Tissue**
- **Slide 7: Organ**
- **Slide 9: Organ System**
- **Slide 11: Organism**
- **Slide 13: Video – Levels of Organization: From Cell to Organism**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 8 activities. Vocabulary words and their meanings are listed above as well as in Grade Results on slide 17.

Lesson Activities (We Do): (50 mins)

As a whole group, complete the Practice Activities. Discuss.

- **Slide 6: Modeling Tissue**
- **Slide 8: Modeling Organs**
- **Slide 10: Modeling Organ Systems**
- **Slide 12: Modeling Levels of Organization**
- **Slide 14: Activity 1: Levels of Organization**
- **Slide 15: Activity 2: Levels of Organization**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- Safari video: Page 1: What are Human Body Systems and Cells (2 mins 57 sec)
- Safari video: Page 2: Cells, Tissues, Organs, Organ Systems (2 mins 30 sec)
- Safari video: Page 3: Interrelationship of the Body Systems (22 mins 20 sec)

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 16: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson. The lesson review is located on slide 16.

- Cells are the basic unit of life.
- A group of cells that carries out a similar function is called a tissue.
- A group of tissues that works together to perform a specific function is called an organ.
- A group of organs that works together to perform a specific function and are called organ systems.
- Organisms are made up of many organ systems that work together.
- Organisms may be either unicellular or multicellular. Bacteria amoeba, and *paramecium* are unicellular organisms, whereas human beings, plants, animals, and fungi are multicellular organisms.

Independent Work – Posttest (They Do) (30 min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/ 7th Grade

Day: 9

Topic/Lesson Title & Grade Results #: Lesson 9: Membrane Transport

Objective(s): Students will

- Differentiate between diffusion and osmosis.
- Explain active and passive transports with examples.
- Describe facilitated diffusion with an example.

Guiding Question(s): How do organisms maintain homeostasis?

TN Curriculum Standard(s): 7.LS1.2 Conduct an investigation to demonstrate how the cell membrane maintains homeostasis through the process of passive transport.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Active transport:** The transport of protein or other biological molecules from one cell to another through the cell membranes, against the concentration gradient.
- **Antiport:** The transport of molecules in the opposite direction to concurrent transport.
- **ATP (Adenosine Triphosphate):** The major source of energy for living cells, produced during cellular respiration.
- **Cytosol:** The gelatinous liquid found inside cells, excluding the cell organelles.
- **Dialysis:** The separation of substances in solutions by means of their unequal diffusion through semi-permeable membranes.
- **Diffusion:** The movement of molecules from a higher concentration to a lower concentration.
- **Hydrolysis:** Breakdown of a chemical bond in a molecule by adding H₂O to form different products.
- **Osmosis:** The process of movement of solvent molecules across a membrane from a region of higher solvent concentration to a region of lower solvent concentration.
- **Passive transport:** The transport of substances across a cell membrane without using up energy molecules.
- **Solution:** The combination of a solute and a solvent.
- **Symport:** The transport of different molecules across cell membranes in the same direction.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins):

The teacher will use the instructional material located in Grade Results to explain diffusion and osmosis. The teacher will focus on comparing diffusion and osmosis. Explain to students that osmosis is the diffusion of water only. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 3: Diffusion – Passive Transport**
- **Slide 4: Facilitated Diffusion – Passive Transport**
- **Slide 5: Membrane Transport - Investigation**
- **Slide 6: Osmosis – Passive Transport**
- **Slide 7: Comparing Diffusion and Osmosis**
- **Slide 8: Active Transport**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 9 activities. Vocabulary words and their meanings are listed above as well as in Grade Results on slide 11.

Lesson Activities (We Do) (50 mins):

As a whole group, complete the Practice Activities. Discuss.

- **Slide 9: Membrane Transport**
- **Watch and Discuss videos located under the Supplemental tab.**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **BrainPOP Video Page 1: Active Transport (3min 45 sec)**
- **BrainPOP Video Page 2: Passive Transport (3min 45 sec)**
- **Safari Video Page 3: Osmosis (3min 45 sec)**
- **Page 4: Diffusion of Food Coloring (39 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 10: (10mins) Please review the following information to ensure that students have a concrete understanding of the lesson. The lesson review is located on slide 10.

- Active transport is classified into primary and secondary active transport systems.
- Sodium-potassium exchange pump is a common example for an active transport system.
- Diffusion, facilitated diffusion, and osmosis are three major types of passive transport.
- Exchange of oxygen and carbon dioxide in the lungs is an example for simple diffusion.

- The transport of glucose from one side of the membrane to the other is done by facilitated diffusion.
- Hypertonic solutions have a higher solute concentration than the cell cytosol.
- Hypotonic solutions have a lower solute concentration than the cell cytosol.
- Dialysis of the blood is used to remove metabolic wastes from the bloodstream.

Independent Work – Posttest (They Do) (30 min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th

Day: 10

Topic/Lesson Title & Grade Results #: Lesson 10: Structure and Function of Major Organ System I

Objective(s): Students will

- Explain the organ level of organization.
- Describe the structure and functions of the integumentary system.
- Describe the structure and functions of the musculoskeletal system.
- Describe the structure and functions of the respiratory system.
- Describe the structure and functions of the cardiovascular system.

Guiding Question(s): How do body systems work together to maintain homeostasis?

TN Curriculum Standard(s): 7.LS1.5 Explain that the body is a system comprised of subsystems that maintain equilibrium and support life through digestion, respiration, excretion, circulation, sensation (nervous and integumentary), and locomotion (musculoskeletal).

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Alveoli:** The tiny air sacs in the lungs where gas exchange takes place.
- **Axial skeleton:** The part of the skeletal system comprised of the skull and its associated bones, the vertebral column, and the rib cage.
- **Blood cells:** Any of the cells contained in blood; erythrocytes, leukocytes, or platelets.
- **Bones:** A hard, tough connective tissue composed mainly of calcified material (material with calcium deposits), made up of cells embedded in a firm matrix.
- **Breathe:** The movement of air into and out of the lungs.
- **Bronchi:** Air passages of the lungs that diverge from the trachea.
- **Cardiac muscle cells:** Cells that make up the cardiac muscle.
- **Cardiac muscle:** The muscle comprising the heart that appears striated and is involuntary in action that enables the heart to beat.
- **Cartilage:** Flexible connective tissue found in the bodies of humans and other animals.

- **Choking:** A severe difficulty in breathing.
- **Dermis:** The skin layer below the epidermis, a vascularized fibrous connective tissue.
- **Diffusion:** The movement of molecules from an area of their higher concentration to an area of their lower concentration.
- **Epidermis:** Outermost layer of the skin, composed of stratified squamous epithelial cells.
- **Hair:** Nonliving structures produced by hair follicles, found on the entire body excluding the palms of the hands, soles and sides of the feet, lips, nipples, and some areas of the external genitalia.
- **Heart:** A hollow, chambered muscular organ that pumps the blood through the circulatory system by rhythmic contraction and dilation.
- **Homeostasis:** The ability to maintain a constant internal environment in an organism regardless of external environmental changes.
- **Humerus:** The bone of the upper arm or forelimb, extending from the shoulder to the elbow.
- **Hypodermis:** Subcutaneous layer of adipose and areolar tissue under the skin.
- **Integumentary system:** A body system composed of the skin (or cutaneous membrane) and its derivative structures, such as hair, nails, sweat, and glands.
- **Larynx:** A voice box that contains elastic vocal cords responsible for vocal tone and speech, located at the upper part of the trachea.
- **Ligaments:** A tough band of connective tissue that attaches one bone to another.
- **Plasma:** The basic straw-colored watery fluid of the blood and lymph.
- **Platelets:** Tiny, noncellular particles in vertebrate blood, that are essential for blood clotting.
- **Red blood cell:** A disc-shaped cell in the blood, responsible for carrying oxygen to the body cells.
- **Rib:** One of a series of long, flat curved bones in humans.
- **Sensory receptor:** Sensory neurons specialized for sensing specific kinds of stimuli.
- **Skin:** Outer covering of the body, composed of the epidermis and the dermis.
- **Slingshot:** A Y-shaped stick having an elastic strap attached to the prongs, used for flinging small stones.
- **Smooth muscles:** Involuntary muscle cells, arranged in layers in different directions, so that the muscles can contract in all directions; found in the lining of the stomach, the intestine, the blood vessels, the uterus, and the urinary bladder.
- **Sweat glands:** Tubular gland that secretes a clear, odorless salt solution called sweat.

- **Tendons:** Thick bands of connective tissue that attach muscles to bones.
- **Trachea:** A major fibrocartilaginous air passage lined with mucous membrane, leading from the larynx to the bronchi.
- **Vertebrae:** Bones that make up the spinal column.
- **Vertebral column:** The spinal column, made up of series of separate vertebrae that form a flexible, curved rod.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins):

The teacher will use the instructional material located in Grade Results to explain the major organ systems within the body. The teacher will focus on the function of each organ that is within the organ system. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 3: Levels of Organization**
- **Slide 5: Organ System**
- **Slide 6: Integumentary system**
- **Slide 7: Video – Integumentary system**
- **Slide 8: Skeletal System**
- **Slide 9: Axial system**
- **Slide 10: Video - Axial system**
- **Slide 11: Functions of the skeletal system**
- **Slide 13: Muscular system**
- **Slide 15: The skeletal muscles**
- **Slide 16: Video – The skeletal muscles**
- **Slide 17: Respiratory system**
- **Slide 18: Video – Respiratory system**
- **Slide 19: Functions of the Respiratory system**
- **Slide 21: Cardiovascular system**
- **Slide 22: Video – Cardiovascular system**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 10 activities. Vocabulary words and their meanings are listed above as well as in Grade Results on slide 25.

Lesson Activities (We Do) (50 mins):

As a whole group, complete the Practice Activities. Discuss.

- **Slide 4: Levels of Organization**
- **Slide 12: Functions of the Skeletal System**
- **Slide 14: Functions of the Skeletal System**
- **Slide 20: Functions of the Respiratory System**
- **Slide 23: Sorting Activity**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

Learn 360 videos

- **Page 1: Cardiovascular System (5 min 15 sec)**
- **Page 2: Respiratory System (4 min 14 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 24: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- The body has many levels of organization.
- A cell is the smallest living unit of the body.
- A group of cells that carry out a common function is called a tissue.
- An organ is a structure that is made of two or more tissues that perform several functions.
- An organ system is a group of organs that work together for a specific purpose.
- There are 11 organ systems in the human body, designed to carry out the different functions of the body.
- The integumentary system is composed of the skin or cutaneous membrane and its derivative structures, such as hair, nails, sweat and oil glands.
- The integumentary system, or skin, protects the human body against environmental hazards.
- The skeletal system also consists of cartilage, ligaments, and tendons.
- The primary function of our skeletal system is to provide a framework for the tissues of our body.
- The muscular system provides means of motion, external and internal, for the body and its organs.
- The skeleton also protects our internal organs, including the heart, the lungs and the brain.
- Respiration is the process of exchange of gases between the cells and the blood.
- The respiratory system provides oxygen to bloodstream and removes carbon dioxide from the bloodstream.
- The cardiovascular system is divided into three major parts:
 - The blood
 - * The blood vessels
 - * The heart
- The cardiovascular system distributes blood cells, water, and dissolved materials, including nutrients, waste products, oxygen, and carbon dioxide, throughout the body.

Independent Work – Posttest (They Do) (30 min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th

Day: 11

Topic/Lesson Title & Grade Results #: Lesson 11: Structure and Functions of Major Organ Systems-II

Objective(s): Students will

- Describe the structure and functions of the digestive system.
- Describe the structure and functions of the nervous system.
- Describe the structure and functions of the urinary system.
- Describe the structure and functions of the endocrine system.
- Describe the structure and functions of the reproductive system.

Guiding Question(s): How do body systems work together to maintain homeostasis?

TN Curriculum Standard(s): 7.LS1.5 Explain that the body is a system comprised of subsystems that maintain equilibrium and support life through digestion, respiration, excretion, circulation, sensation (nervous and integumentary), and locomotion (musculoskeletal).

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- Absorption: The process of absorbing or assimilating substances into cells through diffusion or osmosis.
- Adrenal gland: An endocrine gland located above the kidney, which secretes steroid hormone and biogenic amines.
- Axon (nerve fiber): A long and slender projection of a nerve cell that conducts impulses away from the cell body.
- Bile: A digestive juice secreted by the liver for the digestion of fat.
- Brain: An organ which serves as the center of the nervous system in all vertebrates.
- Cell body (perikaryon): The compact area of a neuron that contains the nucleus and other cell organelles.
- Chyme: A semi-liquid mass of partly digested food that passes from the stomach to the duodenum.
- Dendrite: Hair-like branched structure in the neuron, attached to the cell body, which receives incoming signals.
- Digestion: The process of conversion of food into small substances, which can be absorbed and assimilated into the body.
- Elimination: The act of discharging waste products through the various excretory organs.
- Enzymes: A group of complex proteins that are produced by living cells and act as catalysts in specific biochemical reactions.
- Gland: A group of cells, a tissue, or an organ that produces and secretes chemicals that can be used somewhere in the body.

- Hormone: A chemical substance secreted by specialized cells that influences growth, development, and metabolism.
- Kidney: A bean-shaped excretory organ used to filter and excrete waste and excess materials from the blood.
- Liver: A large lobed glandular organ that secretes bile, and which is involved in many metabolic processes.
- Lung: Sac-like respiratory organ, through which CO₂ is removed from the blood, and O₂ is brought into the body.
- Metabolism: The sum of the biochemical reactions that take place within each cell to provide energy for life processes.
- Nephrons: The functional units of the kidney.
- Neuron: A cell in the nervous system that conducts nerve impulses.
- Pancreas: A large, elongated, mixed exocrine and endocrine gland, secreting glucose metabolism controlling hormones and pancreatic digestive juice.
- Peristalsis: A wave-like muscular movement passing along the alimentary canal.
- Respiration: The transport of O₂ from the outside air into the cells and the transport of CO₂ in the opposite direction.
- Spinal cord: A long, thin, tubular part of the central nervous system that extends from the brain.
- Urethra: A duct through which urine is discharged in most mammals.
- Villi: Small hair-like projections on the mucous membrane of the small intestine.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins): The teacher will use the instructional material located in Grade Results to explain the major organ systems within the body. The teacher will focus on the function of each organ that is within the organ system. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 3: Digestive System**
- **Slide 4: Video – Digestive system**
- **Slide 5: Functions of the Digestive system**
- **Slide 7: Nervous system**
- **Slide 9: Nervous system: Types**
- **Slide 10: Functions of the Nervous System**
- **Slide 11: Urinary System**
- **Slide 12: Video – Urinary system**
- **Slide 14: Endocrine system**
- **Slide 15: Glands of the Endocrine System**
- **Slide 16: Functions of the Endocrine System**
- **Slide 17: Reproductive System**
- **Slide 18: Female Reproductive system**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 11 activities. Vocabulary words and their meanings are listed above as well as in Grade Results on slide 21.

Lesson Activities (We Do) (50 mins):

As a whole group, complete the Practice Activities. Discuss.

- **Slide 6: Digestive System**
- **Slide 8: Nervous System**
- **Slide 13: Urinary System**
- **Slide 19: Functions of the Reproductive System**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Learn 360: Healthy Digestive and Excretory Systems (19 mins 1 sec)**
- **Safari: Interrelationship of the Body Systems (22 mins 18 sec)**
- **Safari: Human Senses (20 mins 39 sec)**
- **Safari The Excretory System (3 mins 5 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 20: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- The body has many levels of organization. Each level carries out specific processes and functions, pertinent to the survival and thriving of the organism.
- The digestive system can be divided into two main parts: the alimentary tract and accessory organs.
- The main function of the digestive system is to breakdown and absorb nutrients that are necessary for growth and maintenance.
- It helps in absorption, detoxification, alteration, storage, and controlled release of the products of digestion and metabolism.
- The nervous system regulates and coordinates body activities such as everything you do, see, hear, feel, smell or touch, and makes sure that all the body's parts are working together efficiently.
- A neuron is the functional part of the nervous system.
- The nervous system provides and interprets sensory information about external and internal conditions.
- The endocrine system comprises the ductless glands that secrete hormones.
- The endocrine glands control many structural and functional changes during development and regulate many physiological processes.
- The urinary system is also called the genito-urinary system as the organs of the urinary system are located in close proximity to the reproductive system and share the use of the urethra with the male reproductive system.

- The urinary system includes two kidneys, two ureters, a urinary bladder, and a urethra.
- The urinary system excretes waste products from the blood and regulates the blood ion concentrations and its pH.
- The male reproductive system produces male sex cells and male sex hormones.
- The female reproductive system produces female sex cells (oocytes) and female sex hormones and provides the hormones to stimulate milk production to nourish the newborn infant.
- The human body performs homeostatic regulation, to adjust the conditions of physiological systems and to maintain homeostasis.

Independent Work – Posttest (They Do) (30min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th Grade

Day: 12

Topic/Lesson Title & Grade Results #: Lesson 12: Biomaterial: Cochlear Implant

Objective(s): Students will

- Define biomaterials.
- Identify a problem in the medical field that pertains to biomaterials.
- Design a solution to the problem in the medical field that pertains to biomaterials.

Guiding Question(s): How is engineering related to life science?

TN Curriculum Standard(s): 7.ETS2.1 Examine a problem from the medical field pertaining to biomaterials and design a solution taking into consideration the criteria, constraints, and relevant scientific principles of the problem that may limit possible solutions.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMs meeting (if applicable)

Key Vocabulary/Terms:

- **Animal sinew:** A fibrous band of animal tissue.
- **Cerebrospinal fluid:** The fluid surrounding the brain.
- **Electrical impulse:** An electrical signal that travels along an axon.
- **Magnetic coupling:** A non-contact coupling that uses magnetic field to transfer force or movement from one rotating member to another.
- **Perilymph fluid:** The fluid contained in the inner ear (cochlea).
- **Regenerative medicine:** A branch of medicine that develops methods to repair, regenerate, or replace damaged or diseased cells, organs, or tissues.
- **Tissue engineering:** A set of methods designed to repair or replace damaged or diseased tissues with synthetic, natural, or semisynthetic tissue mimics.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins): The teacher will use the instructional material located in Grade Results to explain biomaterials. The teacher will focus on the use of biomaterial within the human body. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take

notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 2: Biomaterials**
- **Slide 4: Hearing Impairment**
- **Slide 5: Cochlear Implant**
- **Slide 6 & 7: Video - Cochlear Implant**
- **Slide 8: Video – Cochlear Implants: Music to Your Ears**
- **Slide 9: Risks/Problems associated during Surgical Procedure of Cochlear Implants**
- **Slide 10: Risks/Problems associated with use of Cochlear Implants**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 12 activities. Vocabulary words and their meanings are listed above as well as in Grade Results on Slide 13.

Lesson Activities (We Do) (50 mins)

As a whole group, complete the Practice Activities. Discuss.

- **Slide 3: Biomaterials**
- **Slide 11: Cochlear Implant**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

Learn 360

- **Page 1: Cochlear Implant Surgery (3 mins 28 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 12: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- Biomaterials can be any substance, which may be natural or synthetic or combination of both, used in the medical field as whole or a part of the human system to diagnose, treat, enhance, or replace any organ, tissue, or function of the body.
- A biomaterial can be made from metals, plastic, ceramic, glass, composite materials, and living cells and tissues.
- Hip joint replacement, heart valves, contact lenses, bone plates, cochlear implants, surgical sutures, surgical mesh, and dental implants are a few applications of biomaterials.
- Hearing impairment is a partial or complete inability of the ears to hear a sound.
- A cochlear implant is the best solution for better hearing.
- Cochlear implants are surgically implanted electronic medical devices used by people with hearing impairment.
- Cochlear implants consist of external and internal parts.

- Cochlear Limited, Advanced Bionics, and MED-EL were the three manufacturers who manufactured cochlear implants in the U.S., as of 2013.
- There are problems associated during the surgical procedure of cochlear implants, as well as after the procedure during the use.

Independent Work – Posttest (They Do) (30 min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min): Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th

Day: 13

Topic/Lesson Title & Grade Results #: Lesson 13: Cell Cycle: Interphase and Mitosis

Objective(s): Students will

- Explain the process of mitosis.
- Describe DNA Replication.
- Discuss how mitosis relates to the processes of asexual reproduction and genetic variation.

Guiding Question(s): How do cells divide?

TN Curriculum Standard(s): 7.LS1.8 Construct an explanation demonstrating that the function of mitosis for multicellular organisms is for growth and repair through the production of genetically identical daughter cells.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Asexual reproduction:** A method of reproduction in which offspring are formed without fusion of gametes or contact of two individuals.
- **Binary fission:** A type of asexual reproduction in which the parent cell undergoes cell division, resulting in two identical daughter cells.
- **Budding:** A type of asexual reproduction in which new organisms develop from an outgrowth or bud from the parent cell due to cell division at one particular site.
- **Cell cycle:** An orderly sequence of events by which a cell duplicates itself and divides into two daughter cells.
- **Cell:** The basic structural and functional unit of all living organisms.
- **Centromere:** The region joining the two sister chromatids that make up an X-shaped chromosome.
- **Centrosome:** Small region of cytoplasm found near the nucleus.
- **Chromatid:** One of two identical strands into which a chromosome splits during mitosis.
- **Chromosomes:** A linear strand of DNA that is encoded with genes and associated proteins in the eukaryotic cells.
- **Crossing over:** The process of exchange of genetic material between homologous chromosomes.
- **Cytokinesis:** The final step in cell division, pinching off the cytoplasm of a cell that results in two daughter cells.
- **Cytoplasm:** Gel-like material, enclosed within the cell membrane, in which cell organelles are embedded.

- **Diploid:** A daughter nucleus with two sets of chromosomes (2n), one from each parent.
- **Fertilization:** A process that involves the fusion of male and female gametes.
- **Gametes:** A mature reproductive cell having a haploid number of chromosomes.
- **Mitosis:** A type of cell division where a body cell divides into two daughter cells, each having the same number of chromosomes.
- **Offspring:** The progeny or descendants of a person, animal, or plant considered as a group.
- **Prokaryotes:** Microscopic, single-celled organisms that neither have a well-developed nucleus nor cell organelles.
- **Regeneration:** A process of recreating a lost or damaged animal or plant part or parts.
- **Replication:** The process of making copies of DNA strands of chromosomes.
- **S phase:** The synthesis phase of the cell cycle where all the cell contents are doubled.
- **Sexual reproduction:** A form of reproduction where two morphologically distinct types of specialized reproductive cells called gametes fuse together, involving a female's large ovum (or egg) and a male's smaller sperm.
- **Sperm:** A male gamete or sex cell.
- **Variation:** An individual that possesses characteristics different from the others of the same kind.
- **Zygote:** The combination of a sperm cell and an egg cell.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins): The teacher will use the instructional material located in Grade Results to explain how cells divide. The teacher will focus on the processes of mitosis and the cell cycle. The teacher will also explain each phase of the cell cycle. Emphasis will be placed on the end result of mitosis which is two identical daughter cells. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 3: Reproduction**
- **Slide 4: Video - Reproduction**
- **Slide 5: Mitotic Cell Division**
- **Slide 7: Interphase: S Phase (DNA replication)**
- **Slide 8: Video – The Central Dogma: DNA Replication**

- **Slide 9: Mitotic Phase**
- **Slide 10: Mitotic Phase: Overall steps**
- **Slide 11: Phases of Mitosis – visual literacy**
- **Slide 12: Video: Interphase**
- **Slide 14: Mitotic Division: Importance**
- **Slide 15: Mitotic Division: Identical Genetic Information in Asexual Reproduction**
- **Slide 16: Video – Asexual Reproduction**
- **Slide 18: Mitotic Division: Hindering Genetic Variation**
- **Slide 19: Video: Mitosis & Cell Division**
- **Slide 22: The Wrap-Up**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 13 activities. Vocabulary words and their meanings are listed above as well as in Grade Results on slide 24.

Lesson Activities (We Do) (50 mins)

As a whole group, complete the Practice Activities. Discuss.

- **Slide 6: Mitotic Cell Division**
- **Slide 13: Differentiate Interphase and Mitotic Phase**
- **Slide 17: Asexual Reproduction**
- **Slide 20: Mitosis and Cell Division**
- **Slide 21: Cell Cycle**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Page 1: Flocabulary: The Cell Cycle and Mitosis (2 mins 23 sec)**
- **Page 2: Safari: Cell Reproduction (36 sec)**
- **Page 3: Mitosis: (1 min 29 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 23: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- Babies grow because of cell division.
- Reproduction is a biological process by which new offspring are produced from their parents.
- In sexual reproduction, two parents are involved: the male parent produces male sex cells, and the female parent produces female sex cells.
- Asexual reproduction is very common in microorganisms such as amoeba and bacteria.
- Asexual reproduction is a form of reproduction where the offspring is produced from a single parent's cells.
- Mitotic cell division (cell cycle) is the orderly sequence of events by which a cell duplicates its contents and divides into two: interphase and mitotic phase.

- The interphase is a preparatory phase for the cell to divide.
- The mitotic phase of the cell cycle consists of two stages: mitosis and cytokinesis.
- Mitosis occurs in most cells of the body and results in the production of two identical daughter cells from one parent cell.
- Cytokinesis refers to the pinching of the cell into the two new daughter cells.
- The mitotic cell division (cell cycle) increases the number of cells (growth) in a living organism.
- The mitotic division (cell cycle) helps in achieving genetically uniform daughter cells, which are identical (same genetic material) to the parent as well as each other.
- Budding in hydra is an asexual reproduction in which a single parent is involved. Hence the genetic material of parent and offspring are the same or identical.

Independent Work – Posttest (They Do) (30 min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th

Day: 14

Topic/Lesson Title & Grade Results #: Lesson 14: Mitosis and Meiosis - MS

Objective(s): Students will

- Explain mitosis in relation to growth and repair.
- Explain the role of mitosis in asexual reproduction.
- Explain meiosis in relation to reproduction and heredity.
- Compare mitosis and meiosis.

Guiding Question(s): How do cells divide for sexual reproduction?

TN Curriculum Standard(s): 7.LS3.2 Distinguish between mitosis and meiosis and compare the resulting daughter cells.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Centrosome:** Small region of cytoplasm found near the nucleus.
- **Chiasma:** The junction points at which chromosome crossing over takes place.
- **Crossing over:** The process of exchange of chromosome parts between homologous chromosomes during meiosis.
- **Diploid:** Two sets of chromosomes (2n).
- **DNA synthesis:** The biochemical process involving the synthesis of DNA, the genetic material.
- **Haploid:** Cells containing a single set of unpaired chromosomes. Sperm and eggs are examples of haploid cells.
- **Meiosis:** A type of cell division that results in the production of gametes (sperm and egg cells).
- **Mitosis:** A type of cell division where a body cell divides into two daughter cells, each having the same number of chromosomes.
- **Synapsis:** The process during which the two sister chromatids, making up the homologous chromosomes, come together as pairs.
- **Tetrad:** A four-part chromosomal structure formed during meiotic division.
- **Zygote:** The combination of a sperm cell and an egg cell.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 min): The teacher will use the instructional material located in Grade Results to explain how cells divide for reproduction. The teacher will compare mitosis and meiosis in order to explain the way each process is used for reproduction. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 4: Mitosis**
- **Slide 6: Meiosis**
- **Slide 8: Mitosis and Meiosis comparison**

Vocabulary: Define and discuss the meaning of the vocabulary words from Lesson 14 activities. Vocabulary words and their meaning are listed above as well as in Grade Results on slide 11.

Lesson Activities (We Do) (50 min):

As a whole group, complete the Practice Activities. Discuss.

- **Slide 3: Cell Division**
- **Slide 5: Mitosis**
- **Slide 7: Meiosis**
- **Slide 9: Mitosis and Meiosis**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Page 1: Cell Reproduction (3 min 51 sec)**
- **Page 2: Meiosis I (4 min 33 sec)**
- **Page 3: Mitosis (1 min 29 sec)**
- **Page 4: Meiosis (1 min 48 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 10: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- The continuity of life is based on the reproduction of cells or cell *division*.
- Mitosis and meiosis are two ways that cells reproduce.
- Mitosis is the process in cell division by which a single cell divides in such a way that it produces two genetically identical daughter cells.
- Meiosis is another process in cell division by which the nucleus divides in all sexually reproducing organisms during the production of gametes.

- Organisms can maintain a constant cell number (the dead cells are replaced by new cells) due to mitotic cell division.
- *Homo sapien* (human beings) cells contain 46 chromosomes, and they beget children who also have 46 chromosomes.

Independent Work – Posttest (They Do) (30min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th

Day: 15

Topic/Lesson Title & Grade Results #: Lesson 15: Sexual and Asexual Reproduction

Objective(s): Students will

- Differentiate pistil and stamen of a flower.
- Differentiate ova and spermatozoa of an animal.
- Explain the process of grafting.
- Describe the three methods of asexual reproduction in animals.
- List the advantages and disadvantages of sexual and asexual reproduction.

Guiding Question(s): How do organisms reproduce?

TN Curriculum Standard(s): 7.LS1.7 Evaluate and communicate evidence that compares and contrasts the advantages and disadvantages of sexual and asexual reproduction.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Apomixis:** An asexual reproduction in which the egg cells of a plant develop into a new plant without fertilization.
- **Budding:** Development of new organism, plant or animal, from an outgrowth or bud.
- **Cell:** The structural and functional unit of an organism.
- **Gamete:** A mature haploid (n) germ cell.
- **Grafting:** A technique that joins tissues of one plant with another.
- **Mitosis:** A cell division happening in body cells resulting in two identical cells.
- **Meiosis:** A cell division happening in sexually reproducing organisms.
- **Ovum:** The female reproductive cell or gamete of an animal.
- **Parthenogenesis:** Development of organism from an ovum without fertilization.
- **Pistil:** The female reproductive organ of a flower.
- **Spermatozoa:** The mature motile male sex cells of an animal.

- **Stamen:** The male reproductive organ of a flower.
- **Reproduction:** A process that creates a new organism.
- **Regeneration:** The natural renewal of the structure of an animal.
- **Zygote:** A diploid cell (2n) that is formed when an egg and sperm fuse.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins): The teacher will use the instructional material located in Grade Results to explain how cells reproduce. The teacher will explain asexual and sexual reproduction in organisms. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 2: Sexual Reproduction**
- **Slide 3: Sexual Reproduction: Advantages and Disadvantages**
- **Slide 4: Asexual Reproduction**
- **Slide 5: Asexual Reproduction in Animals**
- **Slide 6: Asexual Reproduction: Advantages and Disadvantages**
- **Slide 8: Video – Sexual and Asexual Reproduction**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 15 activities. Vocabulary words and their meanings are listed above as well as in Grade Results on slide 11.

Lesson Activities (We Do) (50 mins)

As a whole group, complete the Practice Activities. Discuss.

- **Slide 7: Asexual Reproduction in Animals**
- **Slide 9: Sexual and Asexual Reproduction**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Page 1: Plant Reproduction: Vegetative Reproduction (4 mins 21 sec)**
- **Page 2: Variation in a species (19 mins 50 sec)**
- **Page 3: Mitosis, Meiosis, and Sexual Reproduction (18 min 23 sec)**
- **Page 4: Asexual Reproduction (2 min 39 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 10: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- Plants and animals reproduce by both sexual and asexual reproduction.

- The flower of a plant has both male and female reproductive parts.
- Higher animals produce a limited number of offspring through sexual reproduction.
- Organisms obtain genetic materials from both their male and female parents.
- Sexual reproduction can make an individual more likely to survive even when environmental conditions change.
- Gamete production and searching for a mate are the disadvantages of sexual production.
- Asexual reproduction is more common in plants than in animals.
- Grafting is widely used to propagate a desired variety of shrubs or tree.
- Fragmentation, budding, and regeneration are the three naturally-occurring methods of asexual reproduction in animals.
- *Hydra*, a marine animal, reproduces by budding.
- Parthenogenesis happens when no male is available for reproduction.

Independent Work – Posttest (They Do) (30 min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th

Day: 16

Topic/Lesson Title & Grade Results #: Lesson 16: Structural and Behavioral Adaptations

Objective(s): Students will

- Define adaptation.
- Discuss some structural adaptations in animals.
- Explain the adaptations of sea turtle to live on land and in water.
- Describe hibernation with an example.
- List some nocturnal animals.

Guiding Question(s): How do organisms adapt to their environment?

TN Curriculum Standard(s): 7.LS1.6 Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Adaptation:** The changes of an organism to become more suited to an environment.
- **Behavior:** The response of an organism to its environment.
- **Cactus:** A succulent plant with a fleshy stem and spines.
- **Environment:** The surrounding that affects a thing.
- **Evaporation:** The process of a liquid becoming gas.
- **Hibernation:** A state of inactivity and metabolic depression in animals.
- **Limbs:** Jointed appendages of an animal that is used for locomotion.
- **Migration:** Seasonal movement of animals from one region to another.
- **Nocturnal:** Organisms that are active at night with highly developed senses of hearing, smell, and eyesight.

- **Shelter:** A structure that provides privacy and protection from danger.
- **Snow:** White flakes of ice that fall from the sky.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins): The teacher will use the instructional material located in Grade Results to explain how animals adapt to their environment. The teacher will focus on behavioral adaptations. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 3: Behavioral Adaptations**
- **Slide 5: Video: Adaptations**
- **Slide 6: Plant and Animal Adaptations**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 16 activities. Vocabulary words and their meanings are listed above as well as in Grade Results on slide 10.

Lesson Activities (We Do) (50 mins):

As a whole group, complete the Practice Activities. Discuss.

- **Slide 4: Adaptations**
- **Slide 7: Animal Adaptations**
- **Slide 8: Adaptation Types**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Page 1: Flocabulary video: Adaptions in Different Environments (2 mins 44 sec)**
- **Page 2: Adaptation and Gene Mutation (6 mins 27 sec)**
- **Page 3: The Anatomy of Flowering Plants (2 min 13 sec)**
- **Page 4: Adaptations (1 min 47 sec)**
- **Page 5: Filming Polar Bears (2 mins 22 sec)**
- **Page 6: Ball Machine (2 mins 9 sec)**
- **Page 7: White Killer Whale (0 min 39 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 9: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- Structural adaptations of plants and animals help them to live better in their environment.

- The thorns in the desert plant cactus are modified leaves that help prevent loss of water.
- Camels have leathery footpads to walk easily in deserts.
- Ducks have webbed feet to swim in the water.
- Polar bears have white fur to blend in with their snowy environments.
- Behavioral adaptations are the things organisms do to survive.

Independent Work – Posttest (They Do) (30min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th

Day: 17

Topic/Lesson Title & Grade Results #: Lesson 17: Mendelian Genetics

Objective(s): Students will

- Discuss the work done by Gregor Johann Mendel on pea plants.
- Explain the monohybrid cross and its inheritance.
- Elucidate Mendel's law of segregation.
- Describe the dihybrid cross and its inheritance.
- Illustrate the test cross and its inheritance.
- Evaluate Mendel's law of independent assortment.

Guiding Question(s): How are traits inherited?

TN Curriculum Standard(s): 7.LS3.3 Predict the probability of individual dominant and recessive alleles to be transmitted from each parent to offspring during sexual reproduction and represent the phenotypic and genotypic patterns using ratios.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Allele:** Alternative form of a gene that is located at a specific position on a specific chromosome.
- **Chromosome:** Mass of genetic material condensed to form chromosomes, made up of DNA and protein.
- **Dihybrid cross:** A cross between two individuals that differ in two traits.
- **Domain-specific words:** The words that are not used frequently, except for specific content areas.
- **Dominant allele:** An allele that produces the same phenotype whether its paired allele is identical or different. A type of gene that masks the expression of a recessive allele on a certain locus.
- **F₁ generation:** First filial generation resulting from the cross between two pure-breeding parents with different parental types.
- **F₂ generation:** Second filial generation resulting from self-hybridization, or inbreeding, of F₁ individuals.
- **Gametes:** A mature reproductive cell having a haploid number of chromosomes.

- **Gene:** The basic unit of heredity information, carried from generation to generation. It is a segment of DNA that codes for a particular protein.
- **Genetics:** The study of gene structure, gene action, and inheritance patterns of the traits from the parents to offspring.
- **Genome:** The total genetic content of an individual.
- **Genotype:** The genetic characteristics of an organism.
- **Heterozygous:** Having two different alleles for a specific trait.
- **Homozygous:** Having identical alleles for a particular trait.
- **Hybrid:** Offspring resulting from a cross between two different species.
- **Inheritance:** The sum of characteristics genetically transmitted from parents to offspring.
- **Meiosis:** Cell division process where gametes are formed.
- **Monohybrid cross:** A cross between two individuals that differ in only one trait.
- **Offspring:** The progeny or descendants of a person, animal, or plant considered as a group.
- **Phenotype:** The visible characteristics of an organism.
- **Phrase:** A group of words that does not have a subject or a verb, but the words work as a unit.
- ***Pisum sativum*:** Scientific name of garden pea plants.
- **Punnett square:** A chart that shows/predicts all possible gene combinations in a cross of parents.
- **Recessive allele:** An allele that produces its characteristic phenotype only when its paired allele is identical.
- **Segregation:** Separation of an individual or group of individuals from a larger group.
- **Symbol:** A visible sign or representation of an idea.
- **Terminology:** A system of words that summarizes the contents of the passage.
- **Test cross:** A cross that is made between a homozygous recessive and an individual from the F₁ generation.
- **Trait:** A notable feature or quality of an organism.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins): The teacher will use the instructional material located in Grade Results to explain how traits are inherited using Punnett squares. The teacher will focus on genotypes and phenotypes of different traits. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will

use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 3: Video – Gregor Mendel’s Experiments**
- **Slide 5: Monohybrid Cross**
- **Slide 7: Test Cross**
- **Slide 8: Dihybrid Cross**
- **Slide 9: Video – Mendel’s Pea Plants and Genetics**
- **Slide 11: Law of Independent Assortment**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 17 activities. Vocabulary words and their meanings are listed above as well as in Grade Results on slide 16.

Lesson Activities (We Do): (50 mins)

As a whole group, complete the Practice Activities. Discuss.

- **Slide 4: Traits of the *Pisum sativum***
- **Slide 6: Monohybrid Cross Symbols**
- **Slide 10: Dihybrid Cross**
- **Slide 12: Law of Independent Assortment**
- **Slide 13 Mendelian Genetics**
- **Slide 14: Domain Specific Words and Phrases**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Page 1: Flocabulary video: Genes and Heredity (2 min 33 sec.)**
- **Page 2: Biography of Gregor Mendel (2 min 06 sec)**
- **Page 3: How to use a Punnett Square (25 min 14 sec)**
- **Page 4: The Process of Heredity (2 min 06 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 15: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- Genetics is the study of gene structure, gene action, and inheritance patterns of traits from parents to offspring.
- Gregor Johann Mendel, called the father of genetics, performed experiments with garden pea plants to study the inheritance of certain traits in pea plants.
- A monohybrid cross is a cross between two individuals that differ in only one trait.
- The inheritance of each trait is determined by "units" or "factors" that are passed unchanged onto the offspring. These units are now called genes.

- An individual inherits a unit from each parent for each trait.
- A trait may not show up in an individual, but still, it can be passed on to the next generation.
- Mendel put forward the law of segregation after his observations from the monohybrid cross.
- Mendel used the *testcross* method to determine whether an individual exhibiting a dominant trait is homozygous or heterozygous to that trait.
- A dihybrid cross is a cross between two individuals that differ in two traits.
- Mendel put forward the law of independent assortment after his observation from a dihybrid cross.
- According to the law of independent assortment, the allelic pairs separate independently during gamete formation.

Independent Work – Posttest (They Do) (30min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/7th Grade

Day: 18

Topic/Lesson Title & Grade Results #: Lesson #18: Gene Mutations and Effects

Objective(s): Students will

- Discuss gene mutations and their types.
- Explain the effects of mutations with examples.

Guiding Question(s): How do structural changes in genes effect the structure and function of an organism?

TN Curriculum Standard(s): 7.LS3.1 Hypothesize that the impact of structural changes to genes (i.e., mutations) located on chromosomes may result in harmful, beneficial, or neutral effects to the structure and function of the organism.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results.

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Key Vocabulary/Terms:

- **Allele:** An alternative form of a gene.
- **Amino acid:** An organic compound containing an amino group and a carboxylic acid group, a monomer of proteins.
- **Codon:** Sequence of three nucleotides specifying an amino acid.
- **Genetic code:** A set of rules that instructs the information stored in DNA to be translated into a protein.
- **Hieroglyphs:** A character of the ancient Egyptian writing system. Logographic scripts that are pictographic in the form in a way reminiscent of ancient Egyptians.
- **Hydrophilic:** Molecule or substance attracted to water.
- **Polypeptide:** Addition of amino acids to the peptide to form long chains by condensation polymerization.
- **Protein:** Biological compound made up of nitrogen, carbon, oxygen, and hydrogen.
- **Recessive:** An allele that produces its characteristic phenotype only when its paired allele is identical.
- **RNA:** Ribonucleic acid, a single-stranded nucleic acid present in all living cells.
- **Stone tablet:** A rigid flat sheet of stone that is intended to bear an inscription.

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do) (20 mins): The teacher will use the instructional material located in Grade Results to explain gene mutations. At the beginning of the lesson, the teacher will introduce important vocabulary words within the lesson. The teacher will use direct instruction to explain each phase and will also check for understanding throughout the lesson. During this time students will follow along, take notes, and annotate, using the “Learning Tools” toolbar on the right-hand side of the screen (in student view) or pen/pencil and paper.

- **Slide 3: Basis of Mutations**
- **Slide 4: Video: The Code of Life**
- **Slide 5: Mutations**
- **Slide 6: Video - Mutations**
- **Slide 7: Types of Gene Mutations**
- **Slide 8: Types of Gene Mutations (cont’d)**
- **Slide 9: Video – Types of Mutations**
- **Slide 10: Types of Gene Mutations (cont’d)**
- **Slide 11: Video - Types of Mutations**
- **Slide 13: Mutations: Harmful Effects**
- **Slide 14: Video - Cystic Fibrosis**
- **Slide 15: Mutations: Harmful Effects (cont’d)**
- **Slide 16: Mutations: Neutral Effects**

Vocabulary: Define and discuss the meaning of the vocabulary words from the Lesson 18 activities. Vocabulary words and their meanings are listed above as well as in Grade Results on slide 19.

Lesson Activities (We Do) (50 mins):

As a whole group, complete the Practice Activities. Discuss.

- **Slide 12: Types of Mutations**
- **Slide 17: Effects of the Mutations**

Supplemental: Please watch and discuss the additional Supplemental Videos under the Supplemental Tab.

- **Page 1: Learn 360 video: Mutations (1 min 7 sec)**

Additional Teacher Resources: None

Break (10 mins)

Lesson Review: Slide 18: (10 mins) Please review the following information to ensure that students have a concrete understanding of the lesson.

- The genetic code is the set of rules giving the correspondence between codons in RNA and amino acids in proteins.
- Any change in the sequence of DNA that affects genetic information is called mutation.
- Mutation resulting from changes in a single gene is called gene mutations.
- A change in one or a few nucleotides at a single location in a DNA sequence is called a point mutation.

- Base substitution occurs when one base is replaced with another base.
- When one nitrogenous base is added or removed in a DNA sequence, it is called frameshift mutation.
- If a nitrogenous base is added to a DNA sequence, it is called insertion.
- If one or more nitrogenous base(s) is/are removed from a DNA sequence, it is called deletion.
- Mutations that do not affect the amino acid sequence are called silent mutations.
- A type of mutation where one nucleotide is replaced with another that causes termination of the amino acid (protein) sequence is called nonsense mutation.
- An altered amino acid sequence may change protein function due to mutation.
- A premature stop codon may destroy protein function due to mutation.

Independent Work – Posttest (They Do) (30 min):

- Students will independently complete the Lesson Posttest located in Grade Results. Make sure students understand that this will be their daily grade.

Closing/Wrap Up/Notes Review (5 min):

- Use the lesson Review to assist in wrapping up the day. Take time to check for understanding. Have students to explain what they learned. Allow them to connect their understanding of the lesson to real world experiences.

Summer School Lesson Plan

Subject/Grade: Science/ 7th

Day: 19

Topic/Lesson Title & Grade Results #: Final Post-Test Review & Post-Test

Objective(s):

- Students will review lessons to prepare for final Post-Test.
- Final Post-test will open. All students must complete the final Post-Test

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do):

Identify the purpose of the course

Connect the course to missing or future coursework and Post-test

Lesson Activities/Supplemental (We Do) – 30-60 minutes

Lesson Activities and Review (We Do):

Check Grade Results and have students to review activities/lesson that they have not completed or need assistance with.

Hold an open Q&A for students to ask questions regarding the activities/lessons they are reviewing.

Independent Work – Posttest (They Do):

Students will review and complete any incomplete/missed/failed coursework.

Closing/Wrap Up:

Summer School Lesson Plan

Subject/Grade: Science/7th

Day: 20

Topic/Lesson Title & Grade Results #: Review Lessons & Quizzes

Objective(s):

- Students will review and complete all incomplete/missed/failed coursework.
- Students can retake daily post-tests up to three (3) times before tests lock. Teachers can unlock test so student can retake the test.
- Students can retake final post-test

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil or notes in Grade Results

Technology: Computer, Whiteboard, TEAMS meeting (if applicable)

Take ATTENDANCE (5 mins)

Lesson Introduction (I Do):

Identify the purpose of the course

Connect the course to missing or future coursework and Post-test

Lesson Activities/Supplemental (We Do) – 30-60 minutes

Lesson Activities and Review (We Do):

Check Grade Results and have students to review activities/lesson that they have not completed or need assistance with.

Hold an open Q&A for students to ask questions regarding the activities/lessons they are reviewing.

Independent Work – Posttest (They Do):

Students will review and complete any incomplete/missed/failed coursework.

Closing/Wrap Up: