

# Ganado Unified School District #20

## (SCIENCE/5<sup>th</sup> Grade)

### PACING Guide SY 2018-2019

Resources	AZ College and Career Readiness Standard	Essential Question (HESS Matrix)	Learning Goal	Vocabulary (Content/Academic)
<b>First Quarter</b>				
<b>Research Topics with A Closer Look.</b> <b>MacMillan/McGraw-Hill</b>	<b>History of Science as a Human Endeavor</b> <i>Identify individual, cultural, and technological contributions to scientific knowledge.</i> <b>S2C1PO 1.</b> Identify how diverse people and/or cultures, past and present, have made important contributions to scientific innovations (e.g., Percy Lavon Julian [scientist], supports Strand 4; Niels Bohr; [scientist], supports Strand 5; Edwin Hubble scientist], support Strand 6).	How do I identify the diverse people and culture, past and present, have made important contributions to scientific innovation?  Who are the diverse people and/or cultures, past and present?	I will be able to: ✓ Identify the diverse people and culture, past and present that have made important contributions to scientific innovations. ✓ Identify different diverse people in history of science.	<ul style="list-style-type: none"> <li>- Scientist</li> <li>- Identify</li> <li>- Diverse</li> <li>- Cultures</li> <li>- Contributions</li> <li>- Scientific Innovation</li> <li>- Percy Lavon Julian</li> <li>- Niels Bohr</li> <li>- Edwin Hubble</li> <li>- Isaac Newton</li> <li>- Albert Einstein</li> <li>- Galileo Galilei</li> <li>- Etc.</li> </ul>

**A Closer Look.**  
**MacMillan/ McGraw-Hill. Life Science Unit A-B Pg#2-230**

**Structure and Function in Living Systems**

*Understand the relationships between structures and functions of organisms.*

**S4C1PO 1.** Identify the functions and parts of skeletal system:

- Protection – rib cage, cranium
- Support – vertebrae
- Movement – pelvis, femur, hip

**S4C1PO 2.** Identify the following types of muscles:

- Cardiac – heart
- Smooth – stomach
- Skeletal – biceps

**S4C1PO 3.** Identify the functions and parts of the nervous system:

- Control center – brain
- Relay mechanism – spinal cord
- Transport messages – nerves

How do I identify the functions of parts of the nervous system (control center, relay mechanism)?

How do I distinguish between voluntary and involuntary responses?

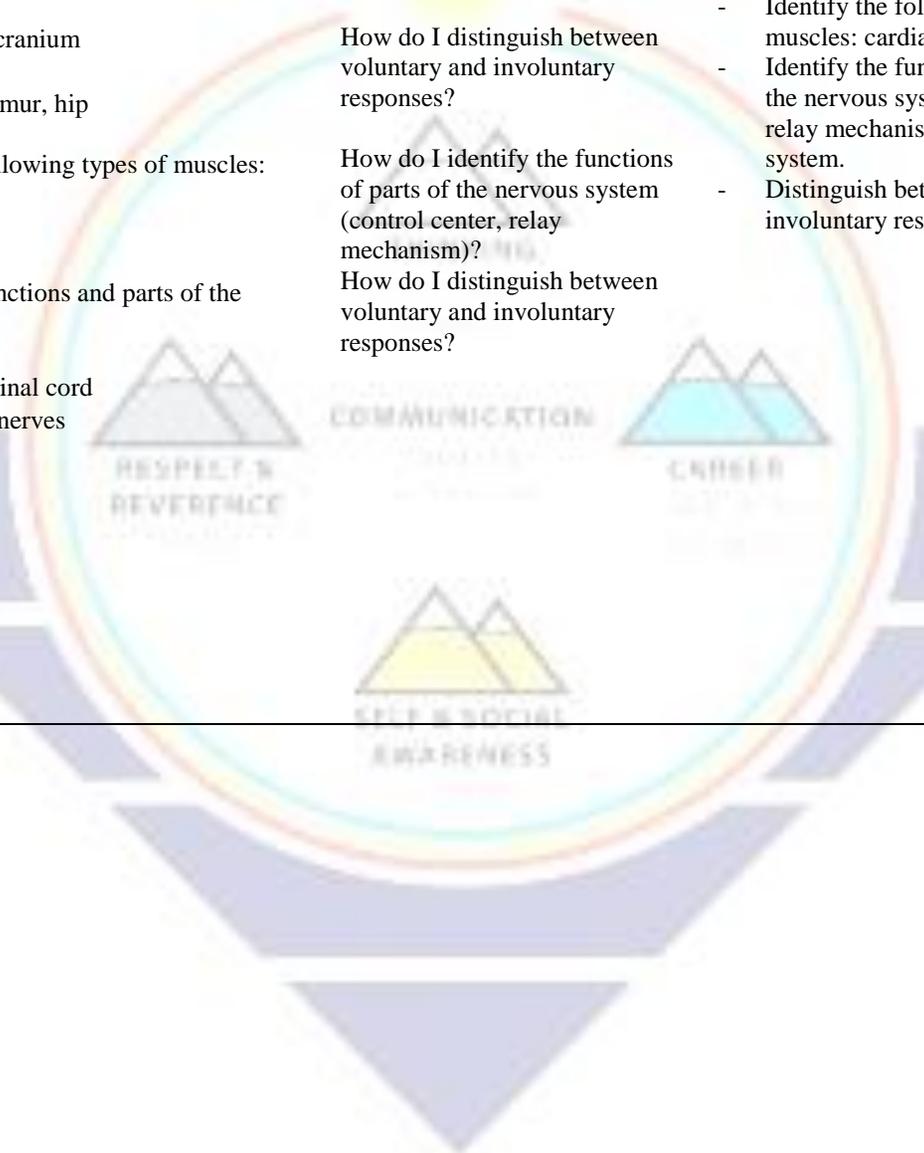
How do I identify the functions of parts of the nervous system (control center, relay mechanism)?

How do I distinguish between voluntary and involuntary responses?

I will be able to:

- Identify the functions and parts of the skeletal system: Protection, support, movement.
- Identify the following types of muscles: cardiac, smooth, skeletal.
- Identify the functions and parts of the nervous system: control center, relay mechanism, or transport system.
- Distinguish between voluntary and involuntary responses.

- Identify
- Functions
- Skeletal System
- Protection
- Rib Cage
- Cranium
- Support
- Vertebrae
- Movement
- Pelvis
- Femur
- Hip
- Muscles
- Cardiac
- Heart
- Smooth
- Biceps
- Function
- Nervous System
- Control Center
- Brain
- Relay Mechanisms
- Spinal Cord
- Transport Message
- Nerves
- Voluntary Response
- Involuntary Response
- 



**Science:  
A Closer  
Look**

**Nature of Scientific Knowledge**

*Understand how science is a process for generating knowledge.*

- What are the structures of plant and animal cells?
- How are living things similar and different?
- What are the structures of plants and their functions?
- How are different types of animals grouped?
- How do body systems work together to carry out life functions?
- How do living things reproduce?
- How do plants grow, develop, and reproduce?
- How do animals grow, develop, and reproduce?
- How do organisms acquire their traits?
- How does energy flow between organisms in an ecosystem?
- How do living and nonliving things interact in an ecosystem?
- How do adaptations help living things survive in their environments?
- How do nutrients cycled through ecosystems?
- How do humans and natural events change ecosystems?

I will be able to:

- Describe cells and explain how they are organized in living things.
- Compare and contrast the structures of animal cells and plant cells.
- Describe kingdom and species.
- Describe organisms in the six kingdoms.
- Discuss the process by which leaves carry out photosynthesis.
- Describe the structure and function of roots, stems, and leaves.
- Define invertebrates; describe invertebrate groups.
- Define vertebrates; describe the major vertebrate groups.
- Summarize the functions of animal systems.
- Describe how the body system works together to perform life functions.
- Explain ecosystems, communities, and populations.
- Describe how food chains, food webs, and energy pyramids work.
- Explain how populations compete and are limited by the resources they need.
- Define habitat, niche, symbiosis, commensalism,

- Organism
- Cell
- Unicellular
- Multicellular
- Chlorophyll
- Tissue
- Organ
- Organ system
- Classification
- Kingdom
- Species
- Vertebrate
- Invertebrate
- Vascular
- Nonvascular
- Gymnosperm
- Angiosperm
- Xylem
- Phloem
- Cambium
- Photosynthesis
- Transpiration
- Cellular respiration
- Asymmetric
- Radial symmetry
- Bilateral symmetry
- Monotreme
- Marsupial
- Placental mammal
- Skeletal system
- Muscular system
- Digestive system
- Excretory system
- Respiratory system
- Circulatory system
- Nervous system
- Endocrine system
- Ecosystem
- Population community
- Food chain
- Food web

**Life Science  
UNIT A:  
Diversity of  
Life**

**S3C2PO 1.** Provide examples that support the premise that science is an ongoing process that changes in response to new information and discoveries (e.g., space exploration, medical advances).

**S3C2PO 2.** Explain the cycle by which new scientific knowledge generates new scientific inquiry.

**S3C2PO 3.** Describe how scientific knowledge is subject to modification and/or change as new information/technology challenges prevailing theories.

**S3C2PO 4.** Compare collaborative approaches that scientists use for investigations (e.g., teams, individual with peer review).

**S3C2PO 5.** Describe qualities of the scientists' habits of mind (e.g., openness, skepticism, integrity, tolerance).

**UNIT B:  
Ecosystem**

	<ul style="list-style-type: none"> <li>• What are characteristics of different biomes?</li> <li>• What are characteristics of water ecosystems?</li> </ul>	<ul style="list-style-type: none"> <li>• Mutualism and parasitism.</li> <li>• Explain structural and behavioral adaptations.</li> <li>• Describe plant and animal adaptations including camouflage and mimicry.</li> </ul>	<ul style="list-style-type: none"> <li>• Predator</li> <li>• Prey</li> <li>• Energy pyramid</li> <li>• Limiting factor</li> <li>• Carrying capacity</li> <li>• Habitat</li> <li>• Niche</li> <li>• Symbiosis</li> <li>• Mutualism</li> <li>• Commensalism</li> <li>• Parasitism</li> <li>• Adaptation</li> <li>• Camouflage</li> <li>• Protective coloration</li> <li>• Protective</li> <li>• Resemblance</li> <li>• Mimicry</li> </ul>
<p><b>Concept 1: Observations, Questions, and Hypothesis</b> <i>Formulate predictions, questions, or hypothesis based on observations. Locate appropriate resources.</i></p> <p><b>S1C1PO 1.</b> Formulate a relevant questions through observations that can be tested by an investigation. (See M05-S2C1-01).</p> <p><b>S1C1PO 2.</b> Formulate predictions in the realm of science based on observed cause and effect relationships.</p> <p><b>S1C1PO 3.</b> Locate information (e.g., book, article, website) related to an investigation (See Q05-S3C6-01 and R05-S3C1-05).</p>	<ul style="list-style-type: none"> <li>• How do I formulate predictions, questions, or hypothesis based on my observations?</li> <li>• How do I formulate a relevant question through my observation that can be tested by an investigation?</li> <li>• How do I formulate predictions in the area of science based on observed cause and effect relationships?</li> <li>• How do I locate information (book, article, website) related to an investigation?</li> </ul>	<p>I will be able to:</p> <ul style="list-style-type: none"> <li>• Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.</li> <li>• Formulate a relevant question through observations that can be tested by an investigation.</li> <li>• Formulate predictions in the realm of science based on observed cause and effect relationships.</li> <li>• Locate information (e.g., book, article, website) related to an investigation.</li> </ul>	<ul style="list-style-type: none"> <li>• Formulate</li> <li>• Predict</li> <li>• Question</li> <li>• Observation</li> <li>• Appropriate</li> <li>• Resources</li> <li>• Relevant</li> <li>• Test</li> <li>• Investigation</li> <li>• Cause and Effect</li> </ul>
<p><b>Scientific Testing (Investigating and Modeling)</b> <i>Design and conduct controlled investigations.</i></p> <p><b>S1C2PO 1.</b> Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials and organisms) in all science inquiry.</p>	<ul style="list-style-type: none"> <li>✓ How do I design and conduct controlled investigations?</li> <li>✓ How do I demonstrate safe behavior and appropriate procedures in a science inquiry?</li> </ul>	<p>I will be able to:</p> <ul style="list-style-type: none"> <li>• Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, and organisms) in all science inquiry.</li> </ul>	<ul style="list-style-type: none"> <li>Safe Behavior</li> <li>Procedures</li> <li>Technology</li> <li>Materials</li> <li>Organisms</li> <li>Science Inquiry</li> <li>Simple Investigation</li> <li>Controlled Variable</li> <li>Independent Variable</li> </ul>

<p><b>S1C2PO 2.</b> Plan a simple investigation that identifies the variables to be controlled.</p>	<p>✓ How do I plan a simple investigation that identifies the variable to be controlled?</p>	<p>• Plan a simple investigation that identifies the variables to be controlled.</p>	<p>Dependent Variable</p>
<p style="text-align: center;"><b>Communication</b> <i>Communicate results of investigations.</i></p> <p><b>S1C4PO 1.</b> Communicate verbally or in writing the results of an inquiry.</p> <p><b>S1C4PO 2.</b> Choose an appropriate graphic representation for collection data:</p> <ul style="list-style-type: none"> <li>• Bar Graph</li> <li>• Line Graph</li> <li>• Venn Diagram</li> <li>• Model</li> </ul> <p><b>S1C4PO 3.</b> Communicate with other groups or individuals to compare the results of a common investigation.</p>	<p>✓ How do I communicate verbally or in writing the results of an inquiry?</p> <p>✓ How do I choose an appropriate graphic representation for collection data (bar graph, line graph, Venn diagram)?</p> <p>✓ How do I communicate with other groups or individuals to compare results of a common investigation?</p>	<p>I will be able to:</p> <ul style="list-style-type: none"> <li>• Communicate verbally or in writing the results of an inquiry.</li> <li>• Choose an appropriate graphic representation for collected data: bar graph, line graph Venn diagram.</li> <li>• Communicate with other groups or individuals to compare the results of a common investigation.</li> </ul>	<ul style="list-style-type: none"> <li>• Communicate</li> <li>• Verbal</li> <li>• Results</li> <li>• Inquiry</li> <li>• Graphic Representation</li> <li>• Bar Graph</li> <li>• Line Graph</li> <li>• Venn Diagram</li> <li>• Model</li> <li>• Common Investigation</li> </ul>

Second Quarter

Macmillian/  
McGraw-  
Hill

UNIT E:  
Matter

UNIT F:  
Force and  
Energy

**Properties and Changes of Properties in Matter**  
*Understand physical and chemical properties of matter.*

**S5C1PO 1.** Identify that matter is made of smaller units called:

- Molecules (e.g., H<sub>2</sub>O, CO<sub>2</sub>)
- Atoms (e.g., H, N, Na)

**S5C1PO 2.** Distinguish between mixtures and compounds.

**S5C1PO 3.** Describe changes of matter:

- Physical – cutting wood, ripping paper, freezing water
- Chemical – burning of wood, rusting of iron, milk turning sour.

- How can the properties of matter be measured?
- What are the building blocks of matter?
- What are the properties of metals, nonmetals, and metalloids?
- How does matter change when energy is added or removed?
- How are mixtures formed and separated?
- How do atoms combine to form molecules and compounds?
- What are the properties of acids, bases and salts?

I will be able to:

- ✓ Describe matter and three states of matter: solid, liquid and gas.
- ✓ Measure and calculate density as mass + volume.
- ✓ Explain the structure of matter, elements, and atoms.
- ✓ Describe common elements and their properties.
- ✓ Name the parts of an atom.
- ✓ Describe the properties of metals, nonmetals, and metalloids.
- ✓ Determine whether an element is a metal, nonmetal, or metalloid.
- ✓ Learn that changes of state occur at distinct temperatures or points.
- ✓ Predict whether an object will expand or contract based in a change on temperature.
- ✓ Identify different kinds of mixtures and their parts.
- ✓ Understand methods of separating mixtures.
- ✓ Find that compounds are made of two or more elements and have different properties than their component elements.
- ✓ Learn the common signs of chemical change.
- ✓ Describe the properties of acids and bases, and find out how indicators work with them.
- ✓ Learn how salts are formed.

- Mass
- Weight
- Volume
- Matter
- Density
- Buoyancy
- Element
- Metal
- Atom
- Nucleus
- Proton
- Neutron
- Electron
- Molecule
- Malleability
- Ductility
- Corrosion
- Semiconductor
- Physical Change
- Chemical Change
- Sublimation
- Melting point
- Boiling point
- Freezing point
- Mixture
- Colloid
- Solution
- Solute
- Solvent
- Alloy
- Solubility
- Distillation

- Compound
- Reactant
- Product
- Precipitate
- Acid
- Ion
- Base
- Acidity
- Alkalinity
- Neutralization
- Electrolyte

**MacMillan/  
McGraw-  
Hill  
UNIT F:  
Forces and  
Energy  
Ch. 11  
Using Forces.  
Pg.# 568-620**

**Concept 2: Motion and Forces**

*Understand the relationship between force and motion.*

**S5C2PO 1.** Describe the following forces:

- Gravity
- Friction

**S5C2PO 2.** Describe the various effects forces can have on an object (e.g., cause motion, halt motion, and change direction of motion, cause deformation).

**S5C2PO 3.** Examine forces and motion through investigations using simple machines (e.g., wedge, plane, wheel and axle, pulley and lever).

**S5C2PO 4.** Demonstrate effects of variables on an object's motion (e.g., incline angle, friction, and applied forces).

- How is motion measured?
- How do forces affect motion?
- How are work and energy related?
- How do machines make our lives easier?
- How is heat transferred?
- What are the properties of sound?
- How does light travel and interact with matter?
- What is electricity and how do we use it?
- How do magnets work?

I will be able to:

- ✓ Understand the relationship between position, motion velocity and acceleration.
- ✓ Calculate velocity and acceleration.
- ✓ Learn about balanced and unbalanced forces.
- ✓ Understand how gravity and friction affect motion.
- ✓ Learn how to apply Newton's three laws of motion.
- ✓ Define work and energy.
- ✓ Understand how work and energy are related.
- ✓ Identify the six types of simple machines. Calculate the output distance for a given effort force and effort distance.
- ✓ Learn the difference between heat and temperature.
- ✓ Find out how heat is transferred by conduction, convection and radiation.
- ✓ Find out how a sound wave travels, and how echolocation works.
- ✓ Learn the parts of a wave: frequency, pitch, and volume.
- ✓ Learn that light is a wave and a particle.
- ✓ Recognize that light can be reflected and bent, and that it has wavelengths and colors.

- ✓ Position
- ✓ Motion
- ✓ Frame of reference
- ✓ Speed velocity
- ✓ Acceleration
- ✓ Momentum
- ✓ Force
- ✓ Friction
- ✓ Balanced force
- ✓ Unbalanced force
- ✓ Action force
- ✓ Reaction force
- ✓ Energy
- ✓ Potential energy
- ✓ Kinetic energy
- ✓ Law of conservation of energy
- ✓ Simple machine
- ✓ Effort
- ✓ Load
- ✓ Fulcrum
- ✓ Compound machine
- ✓ Efficiency
- ✓ Heat
- ✓ Temperature
- ✓ Conduction
- ✓ Convection
- ✓ Radiation
- ✓ Sound wave
- ✓ Frequency
- ✓ Echolocation
- ✓ Wavelength

			<ul style="list-style-type: none"> <li>✓ Understand static electricity and the attraction between charged objects. Describe the different types of electric circuits.</li> <li>✓ Explain how magnetism works and how electromagnets work and are used.</li> <li>✓ Describe how generators produce electricity.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Photon</li> <li>✓ Translucent</li> </ul>
<p><b>TMR</b> <b>Other Resources</b></p>	<p><b>Observations, Questions, and Hypotheses</b> <i>Formulate predictions, questions, or hypotheses based on observations.</i> Locate appropriate resources.</p> <p><b>S1C1PO 1.</b> Formulate a relevant question through observations that can be tested by an investigation. (See M05-S2C1-01).</p> <p><b>S1C1PO 2.</b> Formulate predictions in the realm of science based on observed cause and effect relationship.</p> <p><b>S1C1PO 3.</b> Locate information (e.g., book, article, website) related to an investigation. (See W05-S3C6-01 and R05-S3C1-05)</p>	<ul style="list-style-type: none"> <li>• How do I formulate predictions, questions, or hypotheses based on my observations?</li> <li>• How do I formulate a relevant question through my observations that can be tested by an investigation?</li> <li>• How do I formulate predictions in the area of science based on observed cause and effect relationships?</li> <li>• How do I locate information (book, article, website) related to an investigation?</li> </ul>	<p>I will be able to:</p> <ul style="list-style-type: none"> <li>• Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.</li> <li>• Formulate a relevant question through observations that can be tested by an investigation.</li> <li>• Formulate predictions in the realm of science based on observed cause and effect relationships.</li> <li>• Locate information (e.g., book, article, website) related to an investigation.</li> </ul>	<ul style="list-style-type: none"> <li>• Formulate</li> <li>• Predict</li> <li>• Question</li> <li>• Observation</li> <li>• Appropriate</li> <li>• Resources</li> <li>• Relevant</li> <li>• Test</li> <li>• Investigation</li> <li>• Cause and Effect</li> </ul>

### Scientific Testing (Investigating and Modeling)

*Design and conduct controlled investigations.*

**S1C2PO 1.** Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, and organisms) in all science inquiry.

**S1C2PO 2.** Plan a simple investigation that identifies the variables to be controlled.

**S1C2PO 3.** Conduct simple investigations (e.g., related to forces and motion, Earth processes) based on student-developed questions in life, physical, and Earth and space sciences.

**S1C2PO 4.** Measure using appropriate tools (e.g., ruler, scale, balance) and units of measure (i.e., metric, U.S. customary). (See M05-S4C4-01)

**S1C2PO 5.** Record data in an organized and appropriate format (e.g., t-chart, table, list, written log). (See W05-S3C2-01 and W05-S3C3-01)

- How do I design and conduct controlled investigations?
- How do I demonstrate safe behavior and appropriate procedures in a science inquiry?
- How do I plan a simple investigation that identifies the variable to be controlled?
- How do I conduct simple investigations based on student-developed questions in life, physical, and Earth and space sciences
- How do I measure using appropriate tools and units of measure?
- How do I record data in an organized and appropriate format?

I will be able to:

- Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, and organisms) in all science inquiry.
  - Plan a simple investigation that identifies the variables to be controlled.
  - Conduct simple investigations (e.g., related to forces and motion, Earth processes) based on student-developed questions in life, physical, and Earth and space sciences.
  - Measure using appropriate tools (e.g., ruler, scale, balance) and units of measure (i.e., metric, U.S. customary).
- Record data in an organized and appropriate format (e.g., t-chart, table, list, written log).

- Safe Behavior
- Procedures
- Technology
- Materials
- Organisms
- Science Inquiry
- Simple Investigation
- Variables
- Controlled
- Forces
- Motion
- Earth Processes
- Student-Developed Questions
- Physical
- Earth
- Space Science
- Measure
- Appropriate Tools
- Ruler
- Scale
- Balance
- Units of Measure
- U.S. Metric
- U.S. Customary
- Data
- Organized
- T-Chart
- Table
- List
- Written Log

<p style="text-align: center;"><b>Analysis and Conclusions</b> <i>Analyze and interpret data to explain correlations and results; formulate new questions.</i></p> <p><b>S1C3PO 1.</b> Analyze data obtained in a scientific investigation to identify trends and form conclusions. (See M05-S2C1-03)</p> <p><b>S1C3PO 2.</b> Analyze whether the data is consistent with the proposed explanation that motivated the investigation.</p> <p><b>S1C3PO 3.</b> Evaluate the reasonableness of the outcome of an investigation.</p> <p><b>S1C3PO 4.</b> Develop new investigations and predictions based on questions that arise from the findings of an investigation.</p> <p><b>S1C3PO 5.</b> Identify possible relationships between variables in simple investigations (e.g., time and distance; incline and mass of object).</p>	<ul style="list-style-type: none"> <li>• How do I analyze and interpret data to explain correlations and results?</li> <li>• How I formulate new questions?</li> <li>• How do I analyze data obtained in a scientific investigation to identify trends?</li> <li>• How do I analyze data obtained in a scientific investigation to form trends?</li> <li>• How do I analyze whether the data is consistent with the proposed explanation that motivated the investigation?</li> <li>• How do I evaluate the reasonableness of the outcome of an investigation?</li> <li>• How do I develop new investigations and predictions based on questions that come from an investigation?</li> <li>• How do I identify possible relationships between variables in a simple investigations?</li> </ul>	<p>will be able to:</p> <ul style="list-style-type: none"> <li>• Analyze data obtained in a scientific investigation to identify trends and form conclusions.</li> <li>• Analyze whether the data is consistent with the proposed explanation that motivated the investigation.</li> <li>• Evaluate the reasonableness of the outcome of an investigation.</li> <li>• Develop new investigations and predictions based on questions that arise from the findings of an investigation.</li> <li>• Identify possible relationships between variables in simple investigations (e.g., time and distance; incline and mass of object).</li> </ul>	<ul style="list-style-type: none"> <li>• Analyze</li> <li>• Data</li> <li>• Scientific Investigation</li> <li>• Trends</li> <li>• Conclusions</li> <li>• Consistent</li> <li>• Explanation</li> <li>• Motivated</li> <li>• Evaluate</li> <li>• Reasonableness</li> <li>• Outcome</li> <li>• Predictions</li> <li>• Relationships</li> <li>• Variables</li> <li>• Time</li> <li>• Distance</li> <li>• Incline</li> <li>• Mass of Object</li> </ul>
<p style="text-align: center;"><b>Communication</b> <i>Communicate results of investigations.</i></p> <p><b>S1C4PO 1.</b> Communicate verbally or in writing the results of an inquiry.</p> <p><b>S1C4PO 2.</b> Choose an appropriate graphic representation for collected data:</p> <ul style="list-style-type: none"> <li>• Bar graph</li> <li>• Line graph</li> </ul>	<ul style="list-style-type: none"> <li>• How do I communicate verbally or in writing the results of an inquiry?</li> <li>• How do choose an appropriate graphic representation for collected data (bar graph, line graph, Venn diagram)?</li> </ul>	<p>I will be able to:</p> <ul style="list-style-type: none"> <li>✓ Communicate verbally or in writing the results of an inquiry.</li> <li>✓ Choose an appropriate graphic representation for collected data: bar graph, line graph, Venn diagram.</li> <li>✓ Communicate with other groups or individuals to compare the results of a common investigation.</li> </ul>	<ul style="list-style-type: none"> <li>• Communicate</li> <li>• Verbal</li> <li>• Results</li> <li>• Inquiry</li> <li>• Graphic Representation</li> <li>• Bar Graph</li> <li>• Line Graph</li> <li>• Venn diagram</li> <li>• Model</li> </ul>

- Venn diagram
- Model

**S1C4PO 3.** Communicate with other groups or individual to compare the results of a common investigation.

- How do I communicate with other groups or individuals to compare results of a common investigation?

- Common Investigation

### Third Quarter

#### Scientific Testing (Investigating and Modeling)

**S1C2PO 3.** Conduct simple investigations (e.g., related to forces and motion, Earth processes) based on student-developed questions in life, physical, and Earth and space sciences.

**S1C2PO 4.** Measure using appropriate tools (e.g., ruler, scale, balance) and units of measure (i.e., metric, U.S. customary).

- ✓ How do I conduct simple investigations based on student-developed questions in life, physical, Earth and space sciences?
- ✓ How do I measure using appropriate tools and units of measure?

I will be able to:

- ✓ Conduct simple investigations (e.g., related to forces and motion, Earth processes) based on student-developed questions in life, physical, Earth and space sciences.
- ✓ Measure using appropriate tools (e.g., ruler, scale, balance) and units of measure (i.e., metric, U.S. customary).

- ✓ Force
- ✓ Motion
- ✓ Earth Processes
- ✓ Student-Developed Questions
- ✓ Physical
- ✓ Earth
- ✓ Space Science
- ✓ Measure
- ✓ Appropriate Tolls
- ✓ Ruler
- ✓ Scale
- ✓ Balance
- ✓ Units of Measure
- ✓ U.S. Metric
- ✓ U.S. Customary

## Changes in Environments

*Describe the interactions between human populations, natural hazards, and the environment.*

**S3C1PO 1.** Explain the impacts of natural hazards on habitats (e.g., global warming, floods, asteroid or large meteor impacts).

**S3C1PO 2.** Propose a solution, resources, or product that addresses a specific human, animal, or habitat need.

**S3C1PO 3.** Evaluate the possible strengths and weaknesses of a proposed solution to a specific problem relevant to human, animal, or habitat needs.

**S3C1PO 4.** Describe the role of gravity as an attractive force between celestial objects.

- ✓ How can we describe Earth's features?
- ✓ What happens when Earth's plates move?
- ✓ How do volcanoes shape the land?
- ✓ What are earthquakes and how do they occur?
- ✓ How do weathering and erosion shape the land?
- ✓ What are the properties of minerals and rocks?
- ✓ What makes up soil and how is it conserved?
- ✓ What source of energy are available to people?
- ✓ How are clean air and water important to living things?
- ✓ What factors in the atmosphere affect weather?
- ✓ How do air masses, fronts, and water vapor affect weather?
- ✓ What causes severe weather?
- ✓ What factors determine an area's climate?
- ✓ What factors in the atmosphere affect weather?
- ✓ How do air masses, fronts, and water vapor affect weather?
- ✓ What causes severe weather?
- ✓ What factors determine an area's climate?

I will be able to:

- Classifying Earth's physical features including landforms and features of the ocean floor.
- Define Earth's layers.
- Discuss how the theory of plate tectonics explains continental drift.
- Identify the processes that produce different kinds of mountains.
- Explain why a volcano erupts.
- Describe how volcanoes build land.
- Discuss the causes of earthquakes.
- Describe how Earthquakes are detected.
- Describe weathering.
- Discuss the relationship between erosion and deposition.
- Explain how Earth's shape and tilt affect temperatures and winds.
- Describe how global and local winds form.
- Explain how clouds and precipitation form.
- Summarize how air masses and fronts affect the weather.
- Summarize the different kinds of severe storms.
- Explain how severe storms form.
- Explain what determines an area's climate.
- Summarize the factors that affect climate.

- Landform
- Relief map
- Topographical map
- Atmosphere
- Hydrosphere
- Crust
- Mantle
- Outer core
- Inner core
- Geologist
- Plate tectonics
- Magma
- Fault
- Volcano
- Lava
- Shield volcano
- Cinder-cone volcano
- Composite volcano
- Island chain
- Hot spot
- Island arc
- Earthquake
- Focus
- Epicenter
- Magnitude
- Tsunami
- Weathering
- Erosion
- Glacier
- Deposition
- Meander
- Sediment
- Floodplain
- Insolation
- Troposphere
- Weather
- Air pressure
- Humidity
- Global wind
- Barometer
- Air mass

- Front weather map
- Thunderstorm
- Blizzard
- Tornado
- Hurricane
- Storm surge
- Cyclone
- Climate
- Rain shadow
- El Nino



### Earth in Solar System

Understand the relationships of the Earth and other objects in solar system.

**S6C3PO 1.** Identify the known planets of the solar system.

**S6C3PO 2.** Describe the distinguishing characteristics of the known planets on the solar system.

**S6C3PO 3.** Describe various objects on the sky (e.g., asteroids, comets, stars, meteors, shooting stars).

**S6C3PO 4.** Describe the change in position and motion of the following objects in the sky over time:

**S6C3PO 5.** Explain the apparent motion of the Sun and stars.

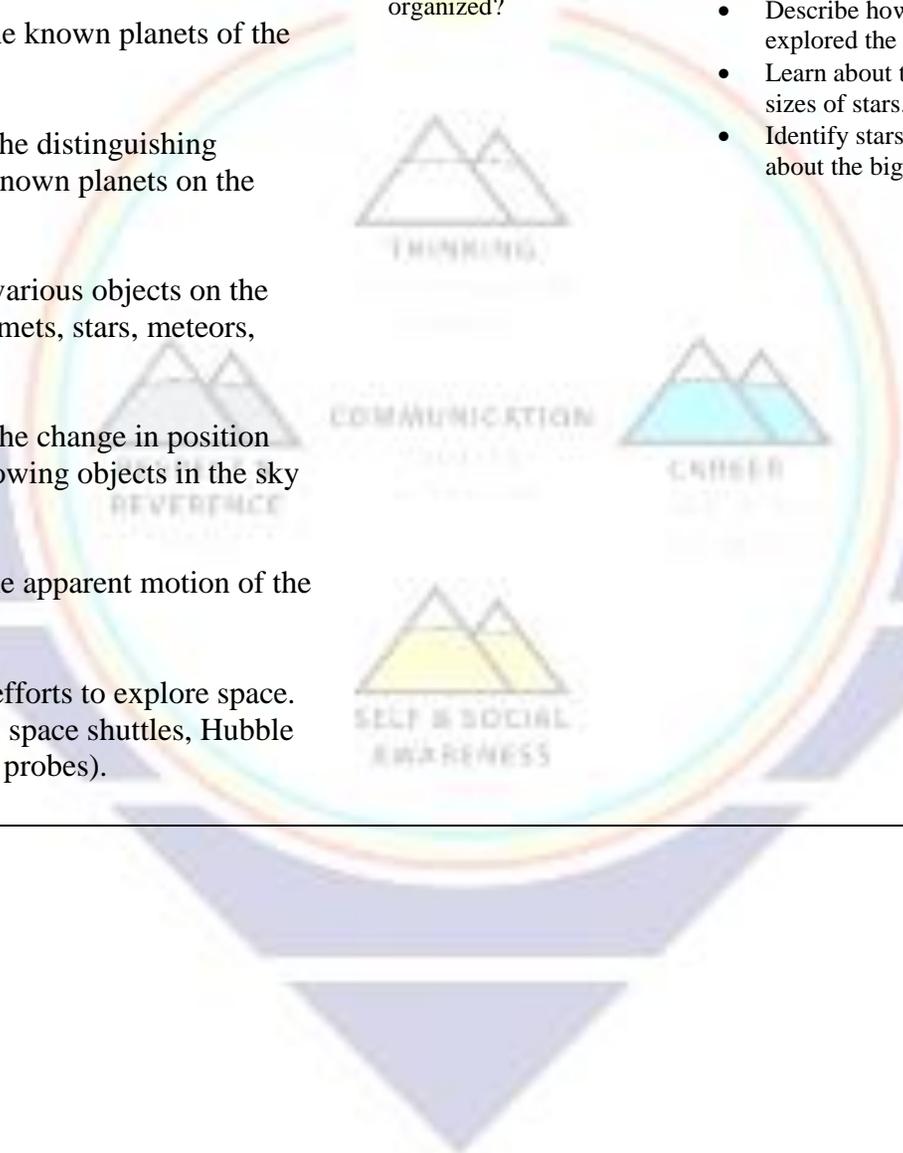
**S6C3PO 6.** Describe efforts to explore space. (e.g., Apollo missions, space shuttles, Hubble space telescope, space probes).

- ✓ What are the components of our Solar System?
- ✓ What are the characteristics of stars and how are they organized?

I will be able to:

- Describe the planets and some of their major features, as well as asteroids, meteors, and comets.
- Describe how humans have explored the solar system.
- Learn about the cycles, colors, and sizes of stars.
- Identify stars systems and learn about the big bang theory.

- Telescope
- Planet
- Moon
- Satellite
- Comet
- Asteroid
- Meteor
- Star
- Nebula
- White dwarf
- Supernova
- Black hole
- Constellations
- Light-year
- galaxy



	<p><b>Observations, Questions, and Hypotheses</b> <i>Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.</i></p> <p><b>S1C1PO 1.</b> Formulate a relevant question through observations that can be tested by an investigation. (See M05-S2C1-01)</p> <p><b>S1C1PO 2.</b> Formulate predictions in the realm of science based on observed cause and effect relationships.</p> <p><b>S1C1PO 3.</b> Locate information (e.g., book, article, website) related to an investigation. (See Q05-S3C6-01 and R05-S3C1-05)</p>	<ul style="list-style-type: none"> <li>• How do I formulate predictions, questions, or hypothesis based in my observations?</li> <li>• How do I formulate a relevant question through my observation that can be tested by an investigation?</li> <li>• How do I formulate predictions in the area of science based on observed cause and effect relationships?</li> <li>• How do I locate information (book, article, website) related to an investigation?</li> </ul>	<p>I will be able to:</p> <ul style="list-style-type: none"> <li>• Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.</li> <li>• Formulate a relevant question through observations that can be tested by an investigation.</li> <li>• Formulate predictions in the realm of science based on observed cause and effect relationships.</li> <li>• Locate information (e.g., book, article, website) related to an investigation.</li> </ul>	<ul style="list-style-type: none"> <li>• Formulate</li> <li>• Predict</li> <li>• Question</li> <li>• Observation</li> <li>• Appropriate</li> <li>• Resources</li> <li>• Relevant</li> <li>• Test</li> <li>• Investigation</li> <li>• Cause and Effect</li> </ul>
<p><b>TMR Other Resources</b></p>	<p><b>Scientific Testing (Investigating and Modeling)</b> <i>Design and conduct controlled investigations.</i></p> <p><b>S1C2PO 1.</b> Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, and organisms) in all science inquiry.</p> <p><b>S1C2PO 2.</b> Plan a simple investigation that identifies the variables to be controlled.</p> <p><b>S1C2PO 3.</b> Conduct simple investigations (e.g., related to forces and motion, Earth processes) based on student-developed questions in life, physical, and Earth and space sciences.</p> <p><b>S1C2PO 5.</b> Record data in organized and appropriate format (e.g., t-chart, table, list, written log).</p>	<ul style="list-style-type: none"> <li>• How do I design and conduct controlled investigations?</li> <li>• How do I demonstrate sage behavior and appropriate procedures in a science inquiry?</li> <li>• How do I plan a simple investigation that identifies the variable to be controlled?</li> <li>• How do I conduct simple investigations based on student-developed questions in life, physical, Earth and Space sciences?</li> <li>• How do I measure using appropriate tools and units of measure?</li> <li>• How do I record data in an organized and appropriate format?</li> </ul>	<p>I will be able to:</p> <ul style="list-style-type: none"> <li>• Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, and organisms) in all science inquiry.</li> <li>• Plan a simple investigation that identifies the variables to be controlled.</li> <li>• Conduct simple investigations (e.g., related to forces and motion, Earth processes) based on student-developed questions in life, physical, and Earth and space sciences.</li> <li>• Measure using appropriate tools (e.g., ruler, scale, balance) and units of measure (i.e., metric, U.S. customary).</li> <li>• Record data in an organized and appropriate format (e.g., t-chart, table, list, written log).</li> </ul>	<ul style="list-style-type: none"> <li>• Safe Behavior</li> <li>• Procedures</li> <li>• Technology</li> <li>• Materials</li> <li>• Organisms</li> <li>• Science Inquiry</li> <li>• Simple Investigation</li> <li>• Variables</li> <li>• Controlled</li> <li>• Forces</li> <li>• Motion</li> <li>• Earth Processes</li> <li>• Student-Developed Questions</li> <li>• Physical</li> <li>• Earth</li> <li>• Space Science</li> <li>• Measure</li> <li>• Appropriate Tools</li> <li>• Ruler</li> <li>• Scale</li> <li>• Balance</li> <li>• Units of Measure</li> </ul>

- U.S. Metric
- U.S. Customary
- Data
- Organized
- T-Chart
- Table
- List
- Written Log

### Analysis and Conclusions

*Analyze and interpret data to explain correlations and results; formulate new questions.*

**S1C3PO 1.** Analyze data obtained in a scientific investigation to identify trends and form conclusions. (See M05-S2C1-03).

**S1C3PO 2.** Analyze whether the data is consistent with the proposed explanation that motivated the investigation.

**S1C3PO 3.** Evaluate the reasonableness of the outcome of an investigation.

**S1C3PO 4.** Develop new investigations and predictions based on questions that arise from the findings of an investigation.

**S1C3PO 5.** Identify possible relationships between variables in simple investigations (e.g., time and distance; incline and mass of object).

- How do I analyze and interpret data to explain correlations and results?
- How I formulate new questions?
- How do I analyze data obtained in a scientific investigation to identify trends?
- How do I analyze data obtained in a scientific investigation to form trends?
- How do I analyze whether the data is consistent with the proposed explanation that motivated the investigation?
- How do I evaluate the reasonableness of the outcome of an investigation?
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- Identify possible relationships between variables in simple investigations (e.g., time and distance; incline and mass of object).

- Analyze
- Data
- Scientific Investigation
- Trends
- Conclusions
- Consistent
- Explanation
- Motivated
- Evaluate
- Reasonableness
- Outcome
- Predictions
- Relationships
- Variables
- Time
- Distance
- Incline
- Mass of Object

variables in a simple investigations?

### Communication

*Communicate results of investigations.*

**S1C4PO 1.** Communicate verbally or in writing the results of an inquiry.

**S1C4PO 2.** Choose an appropriate graphic representation for collection data:

- Bar graph
- Line graph
- Venn Diagram
- Model

**S1C4PO 3.** Communicate with other groups or individuals to compare the results of a common investigation.

- How do I communicate verbally or in writing the results of an inquiry?
- How to choose an appropriate graphic representation for collected data (bar graph, line graph, Venn diagram)?
- How do I communicate with other groups or individuals to compare results of a common investigation?

I will be able to:

- Communicate verbally or in writing the results of an inquiry.
- Choose an appropriate graphic representation for collected data: bar graph, line graph, and Venn diagram.
- Communicate with other groups or individuals to compare the results of a common investigation.

- Communicate
- Verbal
- Results
- Inquiry
- Graphic Representation
- Bar Graph
- Line Graph
- Venn diagram
- Model
- Common Investigation

## Fourth Quarter

### Science and Technology in Society

*Develop viable solutions to a need or problem.*

**S3C2PO 1.** Describe the relationship between science and technology.

**S3C2PO 2.** Explain how scientific knowledge, skills, and technological capabilities are integral to a variety of careers.

**S3C2PO 3.** Design and construct a technological solution to a common problem or need using common materials.

- How do I describe the relationship between science and technology?
- How do I explain how scientific knowledge, skills, and technological capabilities are integral to a variety of careers?
- Design and construct a technological solution to a common problem or need using common materials.

I will be able to:

- Describe the relationship between science and technology.
- Explain how scientific knowledge, skills, and technological capabilities are integral to a variety of careers.
- Design and construct a technological solutions to a common problem or need using common materials.

- Relationship
- Science
- Technology
- Scientific Knowledge
- Scientific Skills
- Technological Capabilities
- Careers
- Design
- Construct

<p><b>History and Nature of Science Nature of Scientific Knowledge</b> <i>Understand how science is a process for generating knowledge.</i></p> <p><b>S2C2PO 3.</b> Describe how scientific knowledge is subject to modification and/or change as new information/technology challenges prevailing theories.</p>	<ul style="list-style-type: none"> <li>• How do I describe scientific knowledge is subject to changes or change as new information/technology challenges new theories?</li> </ul>	<p>I will be able to:</p> <ul style="list-style-type: none"> <li>• Describe how scientific knowledge is subject to changes or change as new information/technology challenges new theories?</li> </ul>	<ul style="list-style-type: none"> <li>• Technology</li> <li>• Prevailing</li> <li>• Theories</li> </ul>
<p><b>Concept 2: Motion and Forces</b> Understand the relationship between force and motion.</p> <p><b>S5C2PO 3.</b> Examine forces and motion through investigation using simple machines (e.g., wedge, plane, wheel, axle, pulley and lever).</p>	<ul style="list-style-type: none"> <li>• How do I examine the forces and motion through investigations using machines?</li> </ul>	<p>I will be able to:</p> <ul style="list-style-type: none"> <li>• Examine forces and motion through investigations using simple machines (e.g., wedge, plane, wheel, axle, pulley and lever).</li> </ul>	<ul style="list-style-type: none"> <li>• Plane</li> <li>• Wheel axle</li> <li>• Pulley</li> <li>• Lever</li> <li>• Wedge</li> </ul>
<p><b>Observations, Questions and Hypotheses</b> <i>Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.</i></p> <p><b>S1C1PO 1.</b> Formulate a relevant question through observations that can be tested by an investigation. (See M05-S2C1-01).</p> <p><b>S1C1PO 2.</b> Formulate predictions in the realm of science based on observed cause and effect relationships.</p>	<ul style="list-style-type: none"> <li>• How do I formulate prediction, questions, or hypotheses based on my observations?</li> <li>• How do I formulate a relevant question through my observation that can be tested by an investigation?</li> <li>• How do I formulate predictions in the area of science based on</li> </ul>	<p>I will be able to:</p> <ul style="list-style-type: none"> <li>• Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.</li> <li>• Formulate a relevant question through observations that can be tested by an investigation.</li> <li>• Formulate predictions in the realm of science based on observed cause and effect relationships.</li> </ul>	<ul style="list-style-type: none"> <li>• Formulate</li> <li>• Predict</li> <li>• Question</li> <li>• Observation</li> <li>• Appropriate</li> <li>• Resources</li> <li>• Relevant</li> <li>• Test</li> <li>• Investigation</li> <li>• Cause and Effect</li> </ul>

**TMR  
Other  
Resources**

**S1C1PO 3.** Locate information (e.g., book, article, website) related to an investigation. (See W05-S3C6-01 and R05-S3C1-05).

observed cause and effect relationships?

- How do I locate information (book, article, website) related to an investigation?

- Locate information (e.g., book, article, website) related to an investigation.

**Scientific Testing (Investigating and Modeling)**

*Design and conduct controlled investigations.*

**S1C2PO 1.** Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, and organisms) in all science inquiry.

**S1C2PO 2.** Plan a simple investigation that identifies the variables to be controlled.

**S1C2PO 3.** Conduct simple investigations (e.g., related to forces and motion, Earth processes) based on student-developed questions in life, physical, and Earth and space sciences.

**S1C2PO 4.** Measure using appropriate tools (e.g., ruler, scale, balance) and units of measure (i.e., metric, U.S. customary). (See M05-S4C4-01)

**S1C2PO 5.** Record data in an organized and appropriate format (e.g., t-chart, table, list, written log). (See W05-S3C2-01 and W05-S3C3-01)

- How do I design and conduct controlled investigations?
- How do I demonstrate safe behavior and appropriate procedures in a science inquiry?
- How do I plan a simple investigation that identifies the variable to be controlled?
- How do I conduct simple investigations based on student-developed questions in life, physical, and Earth and space sciences
- How do I measure using appropriate tools and units of measure?
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**Analysis and Conclusions**  
*Analyze and interpret data to explain correlations and results; formulate new questions.*

**S1C3PO 1.** Analyze data obtained in a scientific investigation to identify trends and form conclusions.  
 (See M05-S2C1-03)

**S1C3PO 2.** Analyze whether the data is consistent with the proposed explanation that motivated the investigation.

**S1C3PO 3.** Evaluate the reasonableness of the outcome of an investigation.

**S1C3PO 4.** Develop new investigations and predictions based on questions that arise from the findings of an investigation.

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- How do I analyze and interpret data to explain correlations and results?
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I will be able to:

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**Communication**  
*Communicate results of investigations.*

**S1C4PO 1.** Communicate verbally or in writing the results of an inquiry.

**S1C4PO 2.** Choose an appropriate graphic representation for collected data:

- bar graph

- How do I communicate verbally or in writing the results of an inquiry?
- How do choose an appropriate graphic representation for collected data (bar

I will be able to:

- Communicate verbally or in writing the results of an inquiry.
- Choose an appropriate graphic representation for collected data: bar graph, line graph Venn diagram.

- Communicate
- Verbal
- Results
- Inquiry
- Graphic Representation
- Bar Graph
- Line Graph
- Venn Diagram

- line graph
- Venn diagram
- model

**S1C4PO 3.** Communicate with other groups or individuals to compare the results of a common investigation.

graph, line graph, Venn diagram)?

How do I communicate with other groups or individuals to compare results of a common investigation?

- Communicate with other groups or individuals to compare the results of a common investigation

- Model Common Investigation

