Interdisciplinary Unit
Third Grade Unit 5

***Note: Different states will teach different sections of this unit. Please refer to the note in each section to see if your state covers that content.

Concept: TRAITS

Essential Question:
How does identifying traits help me to understand how and why something/someone behaves in a certain way?

Deepening questions:
How can matter be described, classified and changed?
How do physical features help living things meet their needs in order to survive in their environments?
* How does learning about what and why rocks a minerals look a special way help us to understand what the earth is made of?
How do traits of a character help me to know information about the character?
How do character traits influence one's relationships and/or actions?
How do we use text features specific to nonfiction text to find and comprehend essential Information?
Why are geometry and geometric figures relevant and important?
How can geometric ideas be communicated using a variety of representations?
Hook:
Harlequin by Juan Gris

Definitions of harlequin:
- a mute character in traditional pantomime, typically masked and dressed in a diamond-patterned costume.
- a stock comic character in Italian commedia dell ' arte.
- a small duck of fast-flowing streams around the Arctic and North Pacific, the male having mainly gray-blue plumage with bold white markings.
- in varied colors; variegated.

Review this definition and display deepening questions for each section. Refer back to the painting after each section asking things like “how is this harlequin painting connected to character traits?”

Section 1: (Ohio, Missouri, Wisconsin, Illinois)
(Indiana, Minnesota, and Michigan may do simple experiments to cover process standards.)
Deepening Question:
How can matter be described, classified and changed?
- Overall unit on matter (with lessons and handouts): [http://betterlesson.com/community/unit/2600/physical-science](http://betterlesson.com/community/unit/2600/physical-science)
Properties of Matter
  o Describing an object
    • Investigating matter (possible lesson):
      http://betterlesson.com/lesson/635340/examples-of-change
  o What is matter?
    ▪ Volume and Mass
  o Different properties of matter
    ▪ Sink/Float
    ▪ Magnetism
    ▪ Conducting Heat
    • Properties of matter description sheet (attachment)
  o What composes matter (elements)

Measuring Matter
***Covers Common Core 3rd grade math standards for measuring liquid measures and masses of objects
  o Length
  o Volume
  o Weight & gravity
  o Using instruments to measure mass

States of Matter (Solids, Liquids, Gases)
  • Sorting matter (attachment)
  • Properties of Matter article (attachment)
  o Classifying matter
  o Properties of matter in each state (particles)
    • Atoms in each state of matter (attachment):
  o Using matter in each state
    • States of matter bingo (call list) kids fill in bingo card with 3 states of matter.
      (attachment)
    • Describing matter (attachment)
    • States of matter test (attachment)

Recording Changes in Matter
  o Heating/Cooling Matter
    ▪ Evaporation
    ▪ Melting
    ▪ Condense
    ▪ Freeze
    • Lesson on “cooling” water: http://betterlesson.com/lesson/635528/cool-changes

Physical Changes in Matter
  o Mixtures/Solutions

Chemical Changes in Matter
  o Signs of chemical change
    ▪ Light/heat
    ▪ Formation of gas
    ▪ Color change
Section 2: Animal Adaptation (Ohio, Michigan, Wisconsin, Illinois)
(not Missouri and Indiana)

Deepening Question:
How do physical features help living things meet their needs in order to survive in their environments?

Review Needs of Living Things

- Webquest: https://sites.google.com/site/birchviewbancroft/science/animal-plant-unit
  - What animals need (air, shelter, space, water)
  - Animals and Their Parts
  - Classifying Animals by Features
    - Vertebrates and Invertebrate
      - Model a backbone (attachment)
      - Classifying vertebrates and invertebrates (attachment)
    - Animal Groups (mammal, bird, reptile, amphibian, insect, fish)
      - Power point on classifying animals (download for free here: https://www.teacherspayteachers.com/Product/Classifying-Animals-Presentation-1341201 )
  - Survival and Meeting Needs
    - Types of survival (adaptation) animal tools:
      - Slideshow: “How do Adaptations help animals?”:
        http://www.slideshare.net/allaintsscience/3rd-grade-ch-2-lesson-3-how-do-adaptations-help-animals
    - Stages in Animal Life Cycles
      - Study Jam video on animal life cycles:
      - Comparing Life Cycles of Different Animals
        - Smartboard lesson:
          http://exchange.smarttech.com/details.html?id=10df561a-7830-46dd-8059-b5cc63635725
      - Animals and their offspring (inherited traits)
        - Physical traits
          - Penguin offspring comparison graphic organizer (attachment)
        - Behavioral traits
          - Learning survival skills
    - Animal Adaption
      - Smartboard display on animal parts and their adaptation needs:
      - Animal Adaptation research project (attachment)
      - Animal adaptation bingo (attachment)
- Worm work: animal adaptation lab (attachment)
- Feather Failure lab (attachment) what happens when an animal’s adaptation is compromised?

Section 3: Earth Science (Rocks and Earth Materials)—Indiana only
Deepening Question:
How does learning about what and why rocks a minerals look a special way help us to understand what the earth is made of?

- Website with links to lots of information, ideas and links to other sites:  
- Rock unit (TPT$9.00-Indiana specific):  
- Tech Flipcharts:  
- Describing rocks
- Sorting rocks by observation (using tools)
- What are rocks made of?
  - Types of rocks
    - Igneous
    - Sedimentary
    - Metamorphic
- Physical properties of rocks
  - Color
  - Streak
  - Luster
  - Hardness
- Classifying rocks by physical properties
- Rocks and minerals in everyday life

Section 3: Character Traits
*Use either selection from your basal or any trade books to teach about character traits.
Deepening Questions:
How do traits of a character help me to know information about the character?
How do character traits influence one’s relationships and/or actions?

- Writer’s Workshop on character traits:  
- Character Traits unit:  
  [http://thegoodlife-lindsay.blogspot.com/2012/08/all-about-character-traits.html](http://thegoodlife-lindsay.blogspot.com/2012/08/all-about-character-traits.html)
- What are character traits?
- Brainstorming different traits
- Identifying traits in characters
- Character trait scrapbook: http://teacher.scholastic.com/activities/scrapbook/
- Comparing traits
- Using known traits to infer
- Drawing conclusions using character traits
  - Passage and activity here: http://www.lakeshorelearning.com/general_content/free_resources/teachers_corner/lesson_plans/drawingConclusions.jsp
- Creating a character
- Writing a story with character development

Section 4: “Traits” of Informational Text
Deepening Question:
How do we use text features specific to nonfiction text to find and comprehend essential information?
- Text features
  - Title
  - Heading
  - Subheading
  - Diagram
  - Photograph
  - Illustration
  - Label
- Search tools
  - Table of contents
  - Index
  - Glossary
  - Further reading/resources

Section 5: Geometry Attributes of Shapes and Fractions
Refer to Harlequin to stimulate conversation about geometry shown in the painting (different shapes, symmetry and fractions)
Deepening Question:
Why are geometry and geometric figures relevant and important?
How can geometric ideas be communicated using a variety of representations?
Attributes:
- Review of other basic shapes
- Polygons
  - Polygon introduction slideshow (attachment)
  - Polygon sort (attachment)
- Triangles
- Quadrilaterals
  - Quadrilateral mix and match (attachment)
- Shared attributes of quadrilaterals
• Partition shapes
Section 6 (if not already covered) Traits of Different Communities
### ELA Standards:

<table>
<thead>
<tr>
<th>CCSS.ELA-LITERACY.RL.3.3</th>
<th>Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCSS.ELA-LITERACY.RI.3.5</td>
<td>Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.</td>
</tr>
<tr>
<td>CCSS.ELA-LITERACY.RI.3.7</td>
<td>Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CCSS.MATH.CONTENT.3.MD.A.2</th>
<th>Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). 1 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCSS.MATH.CONTENT.3.G.A.1</td>
<td>Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories</td>
</tr>
<tr>
<td>CCSS.MATH.CONTENT.3.G.A.2</td>
<td>Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.</td>
</tr>
</tbody>
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Standards per State:

### Ohio

<table>
<thead>
<tr>
<th>Science</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>LS.3.1.</td>
<td>Offspring resemble their parents and each other.</td>
</tr>
<tr>
<td>LS.3.2.</td>
<td>Individuals of the same kind differ in their traits and sometimes the differences give individuals an advantage in surviving and reproducing.</td>
</tr>
<tr>
<td>LS.3.3.</td>
<td>Plants and animals have life cycles that are part of their adaptations for survival in their natural environments.</td>
</tr>
<tr>
<td>PS.3.1.</td>
<td>All objects and substances in the natural world are composed of matter.</td>
</tr>
<tr>
<td>PS.3.2.</td>
<td>Matter exists in different states, each of which has different properties.</td>
</tr>
<tr>
<td>SIA.3.1.</td>
<td>Observe and ask questions about the natural environment;</td>
</tr>
<tr>
<td>SIA.3.2.</td>
<td>Plan and conduct simple investigations;</td>
</tr>
<tr>
<td>SIA.3.3.</td>
<td>Employ simple equipment and tools to gather data and extend the senses;</td>
</tr>
<tr>
<td>SIA.3.4.</td>
<td>Use appropriate mathematics with data to construct reasonable explanations;</td>
</tr>
<tr>
<td>SIA.3.5.</td>
<td>Communicate about observations, investigations and explanations</td>
</tr>
<tr>
<td>SIA.3.6.</td>
<td>Review and ask questions about the observations and explanations of others.</td>
</tr>
</tbody>
</table>

### Michigan

Science:

| MI.L.EV.03.12. | Relate characteristics and functions of observable body parts to the ability of animals to live in their environment (sharp teeth, claws, color, body coverings). |
| MI.L.OL.03.32. | Identify and compare structures in animals used for controlling body temperature, support, movement, food-getting, and protection (for example: fur, wings, teeth, scales). |
| MI.L.OL.03.42. | Classify animals on the basis of observable physical characteristics (backbone, body coverings, limbs). |
| MI.S.IA.03.13. | Communicate and present findings of observations and investigations. |
| MI.S.IA.03.14. | Develop research strategies and skills for information gathering and problem solving. |

### Missouri

Science

| MO.3.1.1.D.a. | Compare the observable physical properties of solids, liquids, or gases (air) (i.e., visible vs. invisible, changes in shape, changes in the amount of space occupied) |
| MO.3.1.1.D.b. | Identify everyday objects/substances as solid, liquid, or gas (e.g., air, water) |
| MO.3.1.1.D.c. | Observe and identify that water evaporates (liquid water changes into a gas as it moves into the air) |
| MO.3.1.1.D.d. | Measure and compare the temperature of water when it exists as a solid to its temperature when it exists as a liquid |
Investigate and observe water can change from a liquid to a solid (freeze), and back again to a liquid (melt), as the result of temperature changes.

Describe the changes in the physical properties of water (i.e., shape, volume) when frozen or melted.

Predict and investigate the effect of heat (thermal energy) (i.e., change in temperature, melting, evaporation) on objects and materials.

Identify sources of thermal energy (e.g., Sun, stove, fire, body) that can cause solids to change to liquids, and liquids to change to gas.

Identify liquid water can be changed into a gas (vapor) in the air.

Identify that clouds and fog are composed of tiny droplets of water.

Identify air as a substance that surrounds us, takes up space and moves around us as wind.

Describe clouds and precipitation as forms of water.

Pose questions about objects, materials, organisms and events in the environment.

Plan and conduct a fair test to answer a question.

Make qualitative observations using the five senses.

Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders).

Measure length to the nearest centimeter, mass using grams, temperature using degrees Celsius, volume using liters.

Use quantitative and qualitative data as support for reasonable explanations.

Communicate simple procedures and results of investigations and explanations through: oral presentations, drawings and maps, data tables, graphs (bar, single line, pictograph), writings.

Examine the physical properties of rock samples and sort them into categories based on size using simple tools like as sieves.

Observe the detailed characteristics of rocks and minerals. Identify rocks as being composed of different combinations of minerals.

Classify and identify minerals by their physical properties of hardness, color, luster and streak.

Describe how the properties of earth materials make them useful to humans in different ways. Describe ways that humans have altered these resources to meet their needs for survival.

Make predictions and formulate testable questions.

Design a fair test.

Plan and carry out investigations—often over a period of several lessons—as a class, in small groups or independently.

Perform investigations using appropriate tools and technologies that will extend the senses.

Use measurement skills and apply appropriate units when collecting data.

Test predictions with multiple trials.

Keep accurate records in a notebook during investigations and communicate findings to others using graphs, charts, maps and models through oral and written reports.

Living things are diverse with many different characteristics that enable them to grow, reproduce and survive.

Offspring are generally similar to their parents, but may have variations that can be advantageous or disadvantageous in a particular environment.
| MN.3.1.1.2.1. | Generate questions that can be answered when scientific knowledge is combined with knowledge gained from one’s own observations or investigations. For example: Investigate the sounds produced by striking various objects. |
| MN.3.1.1.2.2. | Recognize that when a science investigation is done the way it was done before, even in a different place, a similar result is expected. |
| MN.3.1.1.2.3. | Maintain a record of observations, procedures and explanations, being careful to distinguish between actual observations and ideas about what was observed. For example: Make a chart comparing observations about the structures of plants and animals. |
| MN.3.1.1.2.4. | Construct reasonable explanations based on evidence collected from observations or experiments. |
| MN.3.1.3.4.1. | Use tools, including rulers, thermometers, magnifiers and simple balance, to improve observations and keep a record of the observations made. |
| MN.3.4.1.1.1. | Compare how the different structures of plants and animals serve various functions of growth, survival and reproduction. For example: Skeletons in animals and stems in plants provide strength and stability. |
| MN.3.4.1.1.2. | Identify common groups of plants and animals using observable physical characteristics, structures and behaviors. For example: Sort animals into groups such as mammals and amphibians based on physical characteristics. Another example: Sort and identify common Minnesota trees based on leaf/needle characteristics. |
| MN.3.4.3.2.1. | Give examples of likenesses between adults and offspring in plants and animals that can be inherited or acquired. For example: Collect samples or pictures that show similarities between adults and their young offspring. |
| MN.3.4.3.2.2. | Give examples of differences among individuals that can sometimes give an individual an advantage in survival and reproduction. |

**Wisconsin Science**

| WI.3.A.4.1. | When conducting science investigations*, ask and answer questions that will help decide the general areas of science being addressed |
| WI.3.A.4.3. | When investigating* a science-related problem, decide what data can be collected to determine the most useful explanations* |
| WI.3.B.4.1. | Use encyclopedias, source books, texts, computers, teachers, parents, other adults, journals, popular press, and various other sources, to help answer science-related questions and plan investigations |
| WI.3.C.4.2. | Use the science content being learned to ask questions, plan investigations*, make observations*, make predictions*, and offer explanations* |
| WI.3.C.4.4. | Use simple science equipment safely and effectively, including rulers, balances, graduated cylinders, hand lenses, thermometers, and computers, to collect data relevant to questions and investigations |
| WI.3.C.4.5. | Use data they have collected to develop explanations* and answer questions generated by investigations* |
| WI.3.C.4.6. | Communicate the results of their investigations* in ways their audiences will understand by using charts, graphs, drawings, written descriptions, and various other means, to display their answers |
| WI.3.D.4.3. | Understand* that substances can exist in different states-solid, liquid, gas |
| WI.3.D.4.5. | Construct* simple models* of what is happening to materials and substances undergoing change*, using simple instruments or tools to aid observations and collect data |
| WI.3.F.4.1. | Discover* how each organism meets its basic needs for water, nutrients, protection, and energy* in order to survive |
| WI.3.F.4.3. | Illustrate* the different ways that organisms grow through life stages and survive to produce new members of their type |
Using the science themes*, develop explanations* for the connections among living and non-living things in various environments

Identify* the combinations of simple machines in a device used in the home, the workplace, or elsewhere in the community, to make or repair things, or to move goods or people

**Illinois**

### Science

| 3.11.4.01. | Understand how to design and perform simple experiments. |
| 3.11.4.02. | Distinguish among and answer questions about performing the following: observing, drawing a conclusion based on observation, forming a hypothesis, conducting an experiment, organizing data, constructing and reading charts and graphs, and comparing data. |
| 3.12.4.02. | Identify the basic divisions of animals and their common characteristics (e.g., define mammal, fish, bird, reptile, amphibian, insect, arachnid; give examples of each). |
| 3.12.4.03. | Identify the life cycle of familiar animals and compare their various stages: birth, growth and development, reproduction, and death. Understand that metamorphosis occurs in some animals (e.g., butterflies, frogs). |
| 3.12.4.04. | Identify the basic needs of living things: animals need air, water, food, and shelter; plants need air, water, nutrients, and light. |
| 3.12.4.06. | Understand that some characteristics of living things are inherited from parents, such as the color of a flower in a plant, or the number of limbs on an animal. Understand that other features, however, are acquired by an organism through interactions with its environment (or learned) and cannot be passed down to the next generation merely through reproduction. |
| 3.12.4.07. | Understand the concept of food chains and food webs and the related classifications of plants or animals (e.g., producers, decomposers, consumers, herbivores, carnivores). |
| 3.12.4.09. | Understand that each plant or animal has different structures that serve different functions in its growth, survival, and reproduction. Understand the concept of animal camouflage and how it relates to the survival of living things. |
| 3.12.4.10. | Identify the basic classifications of animals based on how they interact with their environment [e.g., (a) Some animals are active in the daytime (diurnal), others in the night time (nocturnal). (b) Some animals have a body temperature that stays the same regardless of significant temperature changes in their immediate environment (warm blooded), others have a body temperature that rises and falls with the temperature changes of their environment (cold blooded). (c) Some animals are herbivores, others are carnivores]. |
| 3.12.4.12. | Understand that some animals survive winter by being fitted for an active life during winter (e.g., penguins), others by hibernation (e.g., certain bears), and others by migration (e.g., monarch butterflies). |
| 3.12.4.13. | Understand that human activities can change the number of species in an area, whether by increasing it or decreasing it. |
| 3.12.4.14. | Understand that matter is usually found in 3 states: liquid, solid, and gas and be able to identify the properties of each. Understand that water can be found in all three forms. |
| 3.12.4.15. | Understand that an increase in temperature generally causes things to expand, and that a decrease in temperature generally causes things to contract. Understand that particles move more slowly in a solid than they do in a liquid or a gas. |
| 3.12.4.16. | Understand that some substances will dissolve in water and some will not. Understand the property of density. |