SCSD 8th Grade Science Curriculum

About this document
Identified within each unit is the Declarative and Procedural Knowledge to be mastered by students as a result of classroom instruction. In support of these, instructional strategies and activities have been included. The Declarative Knowledge identifies a basic learning progression that students may follow in developing an understanding of the concepts that help them to answer the essential question of the unit. In this learning progression the writing team referenced the Project 2061 Atlas of Science Literacy. In comparing the NYSED Science Core Curriculum to this document gaps were identified that possibly could limit student's ability to make connections between sub-learning's. These additional learning's are in italics under the Declarative Knowledge column. While they are not required by NYSED it is suggested that these be taught to students. At the bottom of each page are the links to the NYSED Intermediate Level Science Core Curriculum and the Project 2061 Atlas of Science Literacy. Once in these documents you can directly reference the specific major understandings.

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Syracuse City School District
Intermediate Science
Grade 8

Unit 1: Connecting Math and Science

Essential Question: Why is important to have an understanding of mathematics as it relates to science?

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<thead>
<tr>
<th>NYS Performance Indicator</th>
<th>Declarative Knowledge: To Know</th>
<th>Procedural Knowledge: To Do</th>
<th>Instructional Strategies</th>
<th>Assessment/Laboratory Investigation/Activities</th>
</tr>
</thead>
</table>
| M1.1 M2.1 M3.1            | • Abstraction and symbolic representation are used to communicate mathematically.  
                             o independent/dependent variables  
                             o Direct, indirect, cyclic, constant  
                             • Deductive and inductive reasoning are used to reach mathematical conclusions.  
                             o interpolate, extrapolate  
                             o patterns, trends  
                             • Critical thinking skills are used in the solution of mathematical problems.  
                             • System International (SI)  
                             o metric system  
                             • K-H-D-M-C (conversions)  
                             • Meter – standard unit of measurement for length (ruler, meter stick)  
                             • Area of a solid cm²  
                             o A=LW  
                             • Volume of a solid cm³  
                             o V=LWH  
                             • Liter – standard unit of measurement for volume (graduated cylinder and displacement of water)  
                             • Volume of an irregularly-shaped object  
|                           | • Extend mathematical notation and symbolism to include variables and algebraic expressions in order to describe and compare quantities and express mathematical relationships.  
                             • Identify independent and dependent variables  
                             • Identify relationships among variables including: direct, indirect, cyclic, constant; identify non-related material  
                             • Apply mathematical equations to describe relationships among variables in the natural world.  
                             • Use inductive reasoning to construct, evaluate, and validate conjectures and arguments, recognizing that patterns and relationships can assist in explaining and extending mathematical phenomena.  
                             • Interpolate and extrapolate from data.  
|                           | • Collaborate with Mathematics teacher to reinforce and support learning goals.  
                             • Data Tables Graphing  
                             • Conversion charts  
                             • Use of manipulatives for the metric system conversions  
                             • Mnemonic devices  
                             o (Kangaroos hopping down mountains drinking chocolate milk)  
|                           | Activity: Determine what the average precipitation per month is for 1 calendar year. Collect data from Syracuse, NY and enter into data table. Make a bar graph to represent what month of the year had the most precipitation. Then make a line graph to represent which year in the past decade day had the most precipitation.  
                             • Text/quiz  
                             • Lab report  
                             • Notebook/journal  
                             • Portfolio  
                             • Lab Written Report  
                             • Concept Map  
                             • Place Mats  
                             • Physical Modeling  
                             • Projects  
                             • Oral Reporting

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Nature of Science Lesson 2
Lesson 3
Inquiry Lab

Chapter 2
Inquiry Lab
Skill Practice

Chapter 5
Inquiry Lab
Skill Practice

Chapter 10
Skill Practice
<table>
<thead>
<tr>
<th>Unit 3 Opener: Nature of Science</th>
<th>(displacement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 13 Inquiry Lab</td>
<td>1 ml = 1 cm³</td>
</tr>
<tr>
<td>Chapter 16 Inquiry Lab</td>
<td>Gram – standard unit of measurement for mass</td>
</tr>
<tr>
<td>Chapter 18 Skill Practice</td>
<td>Density – Mass divided by volume (mass per unit volume)</td>
</tr>
<tr>
<td>Chapter 20 Inquiry Lab Skill Practice</td>
<td>Newtons – standard unit of weight</td>
</tr>
<tr>
<td>Math Skill Handbook</td>
<td></td>
</tr>
<tr>
<td>Science Skill Handbook</td>
<td></td>
</tr>
</tbody>
</table>

VOCABULARY
- Constant
- Cyclic
- Deductive reasoning
- Density
- Dependent
- Direct
- Extrapolate
- Gram Independent
- Indirect
- Inductive reasoning
- Interpolate
- Liter
- Meter
- Metric system
- Newton
- Patterns
- System International
- Trends
- Variable
- Volume

- Quantify patterns and trends. GS 4
- Apply mathematical knowledge to solve real-world problems and problems that arise from the investigation of mathematical ideas, using representations such as pictures, charts, and tables.
- Use appropriate units for measured or calculated values. GS 3
- Convert from one metric unit to another (example: cm to m, mm to m, km to mm, etc.).
- Use appropriate scientific tools to solve problems about the natural world:
  - zero a triple beam balance
  - use a stop watch to measure amounts of time
  - determine the volume of objects using rulers and graduated cylinders
  - read the meniscus on a graduated cylinder
  - use a spring scale to measure newtons (weight)
  - use a thermometer to measure temperature

GS 2

Numbers (do numbers have units?)
## Unit 2: Scientific Inquiry

**Essential Question:** How do scientists answer questions and solve problems?

<table>
<thead>
<tr>
<th>NYS Performance Indicator</th>
<th>Declarative Knowledge: To Know</th>
<th>Procedural Knowledge: To Do</th>
<th>Instructional Strategies</th>
<th>Assessment /Laboratory Investigation /Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1.1 S1.2 S2.1 S2.2 S3.1 S3.2</td>
<td><img src="#" alt="Table content" /></td>
<td><img src="#" alt="Table content" /></td>
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</tbody>
</table>

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### Nature of Science Lesson 1

**Lesson 2**

**Lesson 3 Inquiry Lab**

**Unit 1 Opener:** Nature of Science

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- The central purpose of scientific inquiry is to develop explanations of natural phenomena.
- Observations lead to questions, which may lead to more questions in the search for explanations.
- Models help to explain phenomena.
  - Observation/observe
  - Hypothesis/hypothesize
  - Inference/infer
  - Prediction/predict
  - Explanation/explain
- Scientific inquiry involves the testing of proposed explanations by using conventional techniques, procedures, and ingenuity.
- There are common safety equipment symbols and techniques to follow during laboratory experiments.
- Scientific investigations can be conducted to test proposed explanations (or hypotheses).
- Controlled investigations include a control group (constant) and an experimental group.
- Using appropriate references, formulate questions independently that will be useful in guiding the search for explanations of everyday observations.
- Formulate questions about natural phenomena and identify appropriate references to investigate a question.
- Refine and clarify questions so that they are subject to scientific investigation.
- Construct explanations independently for natural phenomena, especially by proposing preliminary visual models of phenomena. GS 9
- Independently formulate a hypothesis.
- Differentiate among observations, inferences, predictions, and explanations.
- Design charts, tables, graphs, and other representations of information.

### Activity:

Use conventional techniques and those of their own design to make further observations and refine their explanations, guided by a need for more information (so any inquiry-based lab). Then represent, present, and defend proposed explanations of everyday observations so that they can be understood and assessed by others.

### Extension Activity:

Seek to clarify, to assess critically, and to reconcile with their own thinking the ideas presented by others, including peers.
<table>
<thead>
<tr>
<th>Chapter 1 Inquiry Lab</th>
<th>Chapter 2 Inquiry Lab</th>
<th>Chapter 7 Inquiry Lab</th>
<th>Chapter 10 Skill Practice</th>
<th>Chapter 13 Inquiry Lab</th>
<th>Chapter 20 Inquiry Lab</th>
<th>Skill Practice</th>
<th>Science Skill Handbook</th>
</tr>
</thead>
<tbody>
<tr>
<td>group containing a dependent and an independent variable.</td>
<td>observations in conventional and creative ways to help them address their research question or hypothesis.</td>
<td>Vocabulary</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>- Dependent variables (responding variables)</td>
<td>- Demonstrate appropriate safety techniques. QS 1</td>
<td>Classify</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- Independent variables (manipulated)</td>
<td>- Conduct an experiment designed by others.</td>
<td>Conclusion</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>- DRY MIX</td>
<td>- Design and conduct an experiment to test a hypothesis.</td>
<td>Constant</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- (Dependent Rests on the Y-axis, Manipulated or Independent rests on the X-axis)</td>
<td>- Use appropriate tools and conventional techniques to solve problems, including:</td>
<td>Dependent variable (responding)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>- Constants</td>
<td>o measuring</td>
<td>Describe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.</td>
<td>o observing</td>
<td>Experimental group</td>
<td></td>
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<tr>
<td>- Define</td>
<td>o describing</td>
<td>Explanation</td>
<td></td>
<td></td>
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<tr>
<td>- Hypothesis</td>
<td>o classifying</td>
<td>Hypothesis</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>- Independent variable ( manipulated)</td>
<td>o sequencing</td>
<td>Independent variable ( responding)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Infer</td>
<td>Develop, present, and defend formal research proposals for testing their own explanations of common phenomena, including ways of obtaining needed observations and ways of conducting simple controlled experiments.</td>
<td>Inference</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- Investigation</td>
<td>Organize results, using appropriate graphs, diagrams, data tables, and other models to show relationships.</td>
<td>Investigation</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- Measure</td>
<td>Generate and use scales, create legends, and appropriately label axes.</td>
<td>Measure</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- Observations</td>
<td>Use and interpret graphs and data</td>
<td>Observations</td>
<td></td>
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</tr>
<tr>
<td>- Phenomena</td>
<td>teachers, authors, and scientists.</td>
<td>Phenomena</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>- Predict</td>
<td>- Activity: Students will design a simple controlled experiment in which they identify independent variables (manipulated), dependent variables (responding), and constants. They must choose an appropriate sample size and number of trials. They will safely conduct their investigation while recording observations and collecting qualitative and quantitative data. A report of findings will be expected. The report will include the following: an accurate description of the procedures used and the data gathered; identification of sources of error and the limitations of data collected; and an evaluation of the original hypothesis in light of the data. Suggestions for improvements and recommendations for</td>
<td>Question</td>
<td></td>
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</tr>
</tbody>
</table>

Activity: Students will design a simple controlled experiment in which they identify independent variables (manipulated), dependent variables (responding), and constants. They must choose an appropriate sample size and number of trials. They will safely conduct their investigation while recording observations and collecting qualitative and quantitative data. A report of findings will be expected. The report will include the following: an accurate description of the procedures used and the data gathered; identification of sources of error and the limitations of data collected; and an evaluation of the original hypothesis in light of the data. Suggestions for improvements and recommendations for...
<table>
<thead>
<tr>
<th></th>
<th>Sequence tables.</th>
<th></th>
<th>further study should also be included within the report.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Interpret the organized data to answer the research question or hypothesis and to gain insight into the problem.</td>
<td></td>
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<tr>
<td></td>
<td>Formulate and defend explanations and conclusions as they relate to scientific phenomena.</td>
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<td></td>
<td>Develop and defend a logical argument about cause-and-effect relationships in an investigation.</td>
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<tr>
<td></td>
<td>Make predictions based on experimental data.</td>
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</tbody>
</table>

- Drops of Water on Penny Lab (With/Without Soap)
- Text/quiz
- Lab report
- Notebook/journal
- Portfolio
- Lab Written Report
- Concept Map
- Place Mats
- Physical Modeling
- Projects
- Oral Reporting
### Unit 3: Organization of Life

#### Essential Question: What is the most basic unit of life and how does it function?

<table>
<thead>
<tr>
<th>NYS Performance Indicator</th>
<th>Declarative Knowledge: To Know</th>
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<th>Assessment/Laboratory Investigation/Activities</th>
</tr>
</thead>
</table>
| **LE 1.1**                | • Necessities of life: food, water, shelter, air 
                             • Characteristics of living things: composed of cells; sense and respond to change, have DNA, use energy, grow and develop, and reproduce.  
                             • All living things are composed of cells, from just one to many millions, whose details are visible only through a microscope. Cells provide structure and carry on major functions to sustain life. LE 1.1a  
                             • The way in which cells function is similar in all living things. Cells grow and divide, producing more cells. Cells take in nutrients, which they use to provide energy for the work that cells do and to make the materials that a cell or an organism needs. LE 1.1b  
                             • Most cells have cell membranes, genetic material, and cytoplasm. Some cells have a cell wall and/or chloroplasts. Many cells have a nucleus. LE 1.1c  
                             • Prokaryotic cells do not have membranes or a nucleus.  
                             • Eukaryotic cells have membrane-bound organelles.  
                             • Some organisms are single celled (unicellular), others are multicellular, including humans. LE 1.1d | • Compare and contrast the parts of plants, animals, and one-celled organisms.  
                             • Distinguish between a prokaryotic cell and a eukaryotic cell.  
                             • Manipulate a compound microscope to view microscopic objects. LES 1  
                             • Determine field of view of a microscope. LES 2  
                             • Prepare a wet mount slide. LES 3  
                             • Use appropriate staining techniques to view organelles. LES 4  
                             • Identify a plant cell and an animal cell.  
                             • Identify and explain the function of the following organelles: nucleus, cell membrane, cell wall, chloroplast, large vacuole and cytoplasm.  
                             • Sequence the following | • Concept mapping  
                             • Think-pair share  
                             • Vocabulary bingo  
                             • Think-aloud  
                             • Reciprocal reading  
                             • Guided reading  
                             • Compare and Contrast  
                             • Journal/Notebook  
                             • KLEW chart | • Activity: “Bear” Necessities (see Appendix)  
                             o (literacy connection—homophones bare, bear) fill in what the bear needs to survive  
                             • Bill Nye: Cells Video  
                             • Lab: “e” lab with hair, thread, and newspaper e  
                             • Lab: Field of view lab with grid slides and prepared slide (ex. Drosophila or plant stem)  
                             • Lab: Comparison of cheek cell and onion skin cell |
<table>
<thead>
<tr>
<th>Skill Practice</th>
<th>LE 1.1e</th>
<th>terms from simplest to most complex: cell, tissue, organ, organ system, organism. LES GS 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 3</td>
<td>• Within cells, many of the basic functions of organisms—such as extracting food and getting rid of wastes—are carried out. The way in which cells function is similar in all living organisms. 5C/M3</td>
<td>• Differentiate between the following types of tissue: epithelial, nervous, muscular, and connective. GS 5</td>
</tr>
<tr>
<td>Lesson 3.1</td>
<td>• Cells</td>
<td></td>
</tr>
<tr>
<td>Lesson 3.2</td>
<td>• Cell membrane</td>
<td></td>
</tr>
<tr>
<td>Inquiry Lab</td>
<td>• Cell wall</td>
<td></td>
</tr>
<tr>
<td>Chapter 4</td>
<td>• Chloroplast</td>
<td></td>
</tr>
<tr>
<td>Lesson 4.1</td>
<td>• Cytoplasm</td>
<td></td>
</tr>
<tr>
<td>Inquiry Lab</td>
<td>• Excretion</td>
<td></td>
</tr>
<tr>
<td>Chapter 10</td>
<td>• Feedback mechanism</td>
<td></td>
</tr>
<tr>
<td>Lesson 10.1</td>
<td>• Function</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Gas exchange</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Genetic material</td>
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</tr>
<tr>
<td></td>
<td>• Microbe</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Microscope</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Molecules</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Multicellular</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Nucleus</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Organism</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Regulation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reproduction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Respiration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Sex cell</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Specialized</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Structure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Tissues</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Unicellular</td>
<td></td>
</tr>
</tbody>
</table>

**VOCABULARY**

- Cells
- Cell membrane
- Cell wall
- Chloroplast
- Cytoplasm
- Excretion
- Feedback mechanism
- Function
- Gas exchange
- Genetic material
- Microbe
- Microscope
- Molecules
- Multicellular
- Nucleus
- Organism
- Regulation
- Reproduction
- Respiration
- Sex cell
- Specialized
- Structure
- Tissues
- Unicellular

**Activity:** Create a model of a plant and animal cell using recycled materials
- Text/quiz
- Lab report
- Notebook/journal
- Portfolio
- Lab Written Report
- Concept Map
- Place Mats
- Physical Modeling
- Projects
- Oral Reporting

**Terms from simplest to most complex:** cell, tissue, organ, organ system, organism.

**Differentiate between the following types of tissue:** epithelial, nervous, muscular, and connective.

**Activity:** Create a model of a plant and animal cell using recycled materials
- Text/quiz
- Lab report
- Notebook/journal
- Portfolio
- Lab Written Report
- Concept Map
- Place Mats
- Physical Modeling
- Projects
- Oral Reporting
Syracuse City School District  
Intermediate Science  
Grade 8

Unit 4: Reproduction  
Essential Question: What are the similarities and differences between how different organisms reproduce?

<table>
<thead>
<tr>
<th>NYS Performance Indicator</th>
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<th>Procedural Knowledge: To Do</th>
<th>Instructional Strategies</th>
<th>Assessment/Laboratory Investigation/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>LE 4.1</td>
<td>Reproduction is necessary for the survival of any species. 5F/M5</td>
<td>Discuss the impact of human choices on the development of future generations.</td>
<td>Direct instruction</td>
<td>Activity: Build or illustrate a model of mitosis and meiosis, comparing the similarities and differences.</td>
</tr>
<tr>
<td>LE 4.2</td>
<td>Some organisms reproduce asexually. Other organisms reproduce sexually. Some organisms can reproduce both sexually and asexually. LE 4.1a</td>
<td>Observe and describe the variations in reproductive patterns of organisms, including asexual and sexual reproduction.</td>
<td>Guided reading</td>
<td>Project: Research the effect of improper nutrition, alcohol, and drugs on a developing organism.</td>
</tr>
<tr>
<td>LE 4.4</td>
<td>There are many methods of asexual reproduction, including division of a cell into two cells, or separation of part of an animal or plant from the parent, resulting in the growth of another individual. LE 4.1b</td>
<td>Explain the role of sperm and egg cells in sexual reproduction.</td>
<td>Reciprocal reading</td>
<td>Activity: Develop a journal entry that is to convince a parent/guardian to make healthy choices to improve the length and quality of their life.</td>
</tr>
<tr>
<td></td>
<td>Methods of sexual reproduction depend upon the species. All methods involve the merging of sex cells to begin the development of a new individual. In many species, including plants and humans, eggs and sperm are produced. LE 4.1c</td>
<td>Explain how fertilization occurs and what the outcome is.</td>
<td>Gallery walk</td>
<td>Text/quiz</td>
</tr>
<tr>
<td></td>
<td>Fertilization and/or development in organisms may be internal or external. LE 4.1d</td>
<td>Explain the differences in a haploid and diploid cell.</td>
<td>Expert panel</td>
<td>Lab report</td>
</tr>
<tr>
<td></td>
<td>Some organisms get all their genes, which contain hereditary information, from a single parent. 5B/M1a</td>
<td>Observe and describe cell division at the microscopic level and its macroscopic effects. LE 1</td>
<td>Double-entry journal</td>
<td>Notebook/journal</td>
</tr>
<tr>
<td></td>
<td>The male sex cell is the sperm. The female sex cell is the egg. Fertilization of an egg by</td>
<td>Distinguish between the divisions of normal cells versus cancerous cells.</td>
<td>Jigsaw</td>
<td>Portfolio</td>
</tr>
</tbody>
</table>

Italicized words are from the Project 2061 Atlas of Science Literacy

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Chapter 1 Lesson 1.1

Chapter 3 Lesson 3.1
<table>
<thead>
<tr>
<th>Chapter 4 Lesson 4.1</th>
<th>a sperm results in a fertilized egg. LE 4.2a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 7 Lesson 7.1</td>
<td>• In sexual reproduction, sperm and egg each carry one-half of the genetic information for the new individual. Therefore, the fertilized egg contains genetic information from each parent. LE 4.2b</td>
</tr>
<tr>
<td>Chapter 10 Lesson 10.3</td>
<td>• Human fertilization occurs when sperm cells from a male's testes are deposited near an egg cell from the female ovary, and one of the sperm cells enters the egg cell. 6B/M1a</td>
</tr>
<tr>
<td>Chapter 13 Lesson 13.3</td>
<td>• The length and quality of human life are influenced by genes and environmental factors, including sanitation, diet, medical care, and personal health behaviors. 6B/M5d</td>
</tr>
<tr>
<td>Chapter 17 Lesson 17.1</td>
<td>• In multi-cellular organisms, cell division is responsible for growth, maintenance, and repair. In some one-celled organisms, cell division is a method of asexual reproduction. LE 4.4a</td>
</tr>
<tr>
<td>Chapter 19 Lesson 19.1 Lesson 19.2</td>
<td>• In one type of cell division (mitosis), chromosomes are duplicated and then separated into two identical and complete sets to be passed to each of the two resulting cells. In mitosis, the hereditary information is identical in all the cells that result. LE 4.4b</td>
</tr>
<tr>
<td>Chapter 19 Lesson 19.1 Lesson 19.2</td>
<td>• In organisms that reproduce sexually, egg and sperm are produced as the result of meiosis (another form of cell division); the resulting egg and sperm contain one-half of the hereditary information. LE 4.4c</td>
</tr>
<tr>
<td>Chapter 19 Lesson 19.1 Lesson 19.2</td>
<td>• Cells repeatedly divide to make more cells for growth and repair. However, abnormal</td>
</tr>
</tbody>
</table>
Cell division can result in various cancers.
LE 4.4d

**Vocabulary**
- Asexual
- Budding
- Cancer
- Diploid cell
- Egg
- Gametes
- Genes
- Haploid cell
- Heredity
- Meiosis
- Mitosis
- Regeneration
- Reproduction
- Runners
- Sexual
- Sperm
- Tumor
- Zygote
## Unit 5: Genetics

**Essential Question:** How does genetic information pass from parent to offspring and contribute to a change in species over time?

<table>
<thead>
<tr>
<th>NYS Performance Indicator</th>
<th>Declarative Knowledge: To Know</th>
<th>Procedural Knowledge: To Do</th>
<th>Instructional Strategies</th>
<th>Assessment/Laboratory Investigation/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>LE 2.2</td>
<td>• Genes are composed of DNA that makes up the chromosomes of cells.</td>
<td>• Identify the part of the cell that contains DNA.</td>
<td>Guided reading</td>
<td><strong>Lab:</strong> Extract DNA from an onion.</td>
</tr>
<tr>
<td>LE 3.1</td>
<td>• Chromosomes are found within the nucleus of the cell.</td>
<td>• Explain why offspring produced sexually look similar to the parents but not exactly alike.</td>
<td>Reciprocal reading</td>
<td><strong>Activity:</strong> Analyze and debate human activities that affect the variations of species (e.g., selective breeding, habitat destruction, pollution).</td>
</tr>
<tr>
<td>LE 3.2</td>
<td>• Each gene carries a single unit of information. A single inherited trait of an individual can be determined by one pair or by many pairs of genes. LE 2.1b</td>
<td>• Use a Punnett Square to determine the probability of certain traits in an offspring. LES 5</td>
<td>Gallery walk</td>
<td><strong>Activity:</strong> Analyze and discuss the environmental activities</td>
</tr>
<tr>
<td></td>
<td>• A human cell contains thousands of different genes.</td>
<td>• Construct a Pedigree Chart to show how dominant/recessive traits are passed on from parents to offspring. LES 5</td>
<td>Expert panel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Each human cell contains a copy of all the genes needed to produce a human being. LE 2.1c</td>
<td>• Describe factors responsible for competition within species and the significance of that competition. GS 8</td>
<td>Double-entry journal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• In asexual reproduction, all the genes come from a single parent. Asexually produced offspring are genetically identical to the parent. LE 2.1d</td>
<td>• Demonstrate natural selection using the traits of an organism and graph the results.</td>
<td>Jigsaw</td>
<td></td>
</tr>
<tr>
<td>Chapter 2 Lesson 2.2</td>
<td>• In sexual reproduction typically half of the genes come from each parent. Sexually produced offspring are not identical to either parent. LE 2.1d</td>
<td></td>
<td>Anticipation guide</td>
<td></td>
</tr>
<tr>
<td>Chapter 3 Lesson 3.1</td>
<td>• In all organisms, genetic traits are passed on from generation to generation (from parent to parent). LE 2.1d</td>
<td></td>
<td>Concept mapping</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Share and compare</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Three-column recall</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>VIPs: Very important points</td>
<td></td>
</tr>
</tbody>
</table>
offspring). LE 2.2a

- Some genes are dominant and some are recessive. Some traits are inherited by mechanisms other than dominance and recessiveness. LE 2.2b
- The probability of traits being expressed can be determined using models of genetic inheritance. Some models of prediction are pedigree charts and Punnett squares. LE 2.2c
- Although both genes and environmental factors affect social behaviors, human beings are still able to invent, learn, and modify a wide variety of these behaviors. 6A/M4
- Like other complex organisms, people vary somewhat in size and shape, skin color, body portions, facial features and so. But these differences are minor compared to the overall similarity of all humans, as demonstrated by the fact that people from anywhere in the world can reproduce with each other and donate blood or organs to one another. Humans are a single species. Furthermore, as great as cultural differences between groups of people seem, people’s complex languages, technologies, and arts unite them as a species distinct from others. 6A/M7
- Genetic mutations and adaptations (natural selection) have resulted in variation of organisms. (Note difference between Lamarck and Darwin.)
- The processes of sexual reproduction and mutation have given rise to a variety of traits within a species. LE 3.1a

- Text/quiz
- Lab report
- Notebook/journal
- Portfolio
- Lab Written Report
- Concept Map
- Place Mats
- Physical Modeling
- Projects
- Oral Reporting

that affect the variations within a species (e.g., climate change).
• Changes in environmental conditions can affect the survival of individual organisms with a particular trait. Small differences between parents and offspring can accumulate in successive generations so that descendants are very different from their ancestors. Individual organisms with certain traits are more likely to survive and have offspring than individuals without those traits. LE 3.1b

• Human activities such as selective breeding and advances in genetic engineering may affect the variations of species. LE 3.1c

• In all environments, organisms with similar needs may compete with one another for resources. LE 3.2a

• Extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient to permit its survival. Extinction of species is common. Fossils are evidence that a great variety of species existed in the past. LE 3.2b

• Many thousands of layers of sedimentary rock provide evidence for the long history of Earth and for the long history of changing life forms whose remains are found in the rocks. Recently deposited rock layers are more likely to contain fossils resembling existing species. LE 3.2c

• Although the time needed for change in a species is usually great, some species of insects and bacteria have undergone significant change in just a few years. LE 3.2d
<table>
<thead>
<tr>
<th>VOCABULARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Adaptations</td>
</tr>
<tr>
<td>• Asexual reproduction</td>
</tr>
<tr>
<td>• Cells (review)</td>
</tr>
<tr>
<td>• Chromosome</td>
</tr>
<tr>
<td>• DNA</td>
</tr>
<tr>
<td>• Dominant</td>
</tr>
<tr>
<td>• Expressed</td>
</tr>
<tr>
<td>• Extinction</td>
</tr>
<tr>
<td>• Fossils</td>
</tr>
<tr>
<td>• Generation</td>
</tr>
<tr>
<td>• Genes</td>
</tr>
<tr>
<td>• Genetic engineering</td>
</tr>
<tr>
<td>• Genetic traits</td>
</tr>
<tr>
<td>• Hereditary</td>
</tr>
<tr>
<td>• Inherited trait</td>
</tr>
<tr>
<td>• Mechanisms</td>
</tr>
<tr>
<td>• Models of prediction</td>
</tr>
<tr>
<td>• Mutations</td>
</tr>
<tr>
<td>• Natural selection</td>
</tr>
<tr>
<td>• Nucleus</td>
</tr>
<tr>
<td>• Offspring</td>
</tr>
<tr>
<td>• Pair</td>
</tr>
<tr>
<td>• Pedigree chart</td>
</tr>
<tr>
<td>• Probability</td>
</tr>
<tr>
<td>• Punnett Square</td>
</tr>
<tr>
<td>• Recessive</td>
</tr>
<tr>
<td>• Selective breeding</td>
</tr>
<tr>
<td>• Sexual reproduction</td>
</tr>
<tr>
<td>• Successive</td>
</tr>
<tr>
<td>• Unit</td>
</tr>
</tbody>
</table>
# Unit 6: Cellular Energy

**Essential Question:** How do organisms obtain and use energy?

<table>
<thead>
<tr>
<th>NYS Performance Indicator</th>
<th>Declarative Knowledge: To Know</th>
<th>Procedural Knowledge: To Do</th>
<th>Instructional Strategies</th>
<th>Assessment/Laboratory Investigation/Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>LE 5.1, LE 5.2, LE 6.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italicized words are from the Project 2061 Atlas of Science Literacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Chapter 1 Lesson 1.1      | • Animals and plants have a variety of body plans in internal structures that contribute to their ability to maintain a balanced condition. LE 5.1a | • Compare and contrast cellular respiration and photosynthesis. | Internet Philosophic chairs Share and compare | Lab: Use a dark material to cover a portion of a leaf on a plant for a week  
  ○ Record observations before and after experiment  
  ○ Analyze Observations. |
| Chapter 2 Lesson 2.2, Lesson 2.4 | • An organism’s overall body plan and its environment determine the way that the organism carries out the life processes. LE 5.1b  
  • All organisms require energy to survive. The amount of energy needed and the method for obtaining this energy vary among cells. Some cells use oxygen to release the energy stored in food (cellular respiration). LE 5.1c  
  • One of the most general distinctions among organisms is between plants, which use sunlight to make their own food, and animals, which consume energy-rich foods. LE 5.1d  
  • Plants and other organisms containing chlorophyll use the energy from sunlight to make sugars from carbon dioxide and water (photosynthesis). LE 6.2a  
  • Plants synthesize food in the form of glucose, which can be used immediately or can be stored for later use. The quantity of sugar molecules increases in green plants during photosynthesis in the presence of sunlight. SE/M1b  
  • The major source of atmospheric oxygen is | • List the organelles necessary for energy production in plant and animal cells.  
  • Analyze the importance of the relationship between plants and animals. GS 8  
  • Explain the need for a constant input of energy for living organisms.  
  • Compare the way a variety of living specimens carry out basic life functions and maintain dynamic equilibrium.  
  • Describe the importance of major nutrients, vitamins, and minerals in maintaining health and promoting growth. | Direct instruction Guided reading Reciprocal reading Gallery walk Graphic organizers Cornell notes |
|                            | • Internet Philosophic chairs Share and compare |                          |                          |                                               |

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**Chapter 1 Lesson 1.1**

**Chapter 2 Lesson 2.2 Lesson 2.4**

**Text/quiz**

**Lab report**

**Notebook/journal**

**Portfolio**
| Inquiry Lab Skill Practice | photosynthesis. Carbon dioxide is removed from the atmosphere and oxygen is released during photosynthesis. LE 6.2b  
- Green plants are the producers of food which is used directly or indirectly by consumers. LE 6.2c  
- Most of what goes on in the universe involves some form of energy being transformed into another. *Energy in the form of heat is almost always one of the products of energy transformations.* 4E/M2  
- Organisms get energy from oxidizing their food, releasing some of its energy as heat. 5E/M3b  
- Almost all food energy comes originally from the sunlight. 5E/M1b  
- Food provides molecules that serve as fuel and building material for all organisms. All living things, including plants, must release energy from their food, using it to carry out their life processes. LE 5.2a  
- *For the body to use food for energy and building materials, the food must first be ingested into molecules that are absorbed and transported to the cells.* 6C/M2  
- Foods contain a variety of substances (vital to all organisms), which include carbohydrates, fats, vitamins, proteins, minerals, and water. LE 5.2b  
- Metabolism is the sum of all chemical reactions in an organism. Metabolism can be influenced by hormones, exercise, diet, and aging. LE 5.2c  
- Energy in food is measured in calories. The total caloric value of each type of food varies. The number of calories a person requires varies from person to person. LE 5.2d  
- In order to maintain a balanced state, all organisms have a minimum daily intake of each type of nutrient | | • Lab Written Report  
• Concept Map  
• Place Mats  
• Physical Modeling  
• Projects  
• Oral Reporting |
based on species, size, age, sex, activity, etc. An imbalance in any of the nutrients might result in weight gain, weight loss, or a diseased state. LE 5.2e

- The cycles continue indefinitely because organisms are decomposed after death to return food molecules to the environment. 5A/M5d

**VOCABULARY**

- Absorbed
- Calories
- Carbohydrate
- Carbon dioxide (CO₂)
- Cellular respiration
- Constant
- Distinctions
- Energy
- Energy transformation
- Fats
- Glucose
- Input
- Metabolism
- Microscopic
- Minerals
- Molecules
- Output
- Oxidizing
- Oxygen (O₂)
- Photosynthesis
- Proteins
- Synthesize
- Transported
- Vitamins
- Water (H₂O)
## Unit 7: Review for NYS 8th Grade Science Exam

### Topics for Review:

<table>
<thead>
<tr>
<th>Living Environment</th>
<th>Life iScience © 2012</th>
<th>Physical Science</th>
<th>Earth Science</th>
</tr>
</thead>
</table>
| - Compare and contrast plant and animal cell organelles and functions | Chapter 1  
Lesson 1.2  
Inquiry Lab  
Skill Practice | Chapter 2  
Lesson 2.2  
Lesson 2.4  
Inquiry Lab |  |
| - Unicellular vs. Multicellular |  |  |  |
| - Levels of organization |  |  |  |
| - Plant structures and functions |  |  |  |
| - Body systems structures and functions in humans |  |  |  |
| - Compare and contrast plant and animal structures and functions |  |  |  |
| - Compare and contrast asexual and sexual reproduction |  |  |  |
| - Compare and contrast mitosis and meiosis |  |  |  |
| - Abnormal cell division vs. cancer |  |  |  |
| - List the events that must occur in order for fertilization to occur |  |  |  |
| - Compare and contrast development of a plant, a human, a frog, and a butterfly. |  |  |  |
| - Explain how microorganisms, plants, and animals undergo regulation to stay alive, and how diseases disrupts regulation |  |  |  |
| - Differentiate between heredity, genes, DNA, and traits |  |  |  |
• Develop and use Punnett squares using dominant, recessive, and co-dominant alleles
• Explain how mutation and having certain traits leads to evolution
• Discuss how human activities such as selective breeding and genetic engineering affect variation in species, and the pros and cons of such activities
• Explain how competition within species can lead to extinction
• Use a dichotomous key to identify an organism and correctly write the Genus and Species. (Homo sapiens)
• Review levels of classification (i.e. King Phillip Came Over For Grape Soda)
• Compare and contrast cellular respiration and photosynthesis
• Give an example of how one’s dynamic equilibrium can be disrupted if lacking a key nutrient or substance
• Show the energy flow through an ecosystem from sun, to producer, to consumer, and to decomposer
• Compare and contrast a food chain, a food web, and an energy pyramid
• Illustrate a water cycle, nitrogen cycle, and a carbon dioxide and oxygen cycle.

Chapter 6
Lesson 6.2

Chapter 9
Lesson 9.1
Lesson 9.2
Lesson 9.3

Chapter 10
Lesson 10.1

Chapter 13
Lesson 13.3

Chapter 14
Lesson 14.1
Lesson 14.2
Lesson 14.3

Chapter 15
Lesson 15.2
Lesson 15.3
Inquiry Lab

Chapter 16
Lesson 16.1
Lesson 16.2
Lesson 16.3
Lesson 16.4

Chapter 17
Lesson 17.1
Lesson 17.2
- Develop a concept map that shows how human activities can lead to overpopulation, acid rain, global warming, ozone depletion, and degradation of resources.

| Chapter 18 | Lesson 18.1 |
| Chapter 19 | Lesson 19.1 |
| Chapter 19 | Lesson 19.2 |
| Chapter 20 | Lesson 20.2 |
| Chapter 20 | Lesson 20.3 |
| Chapter 21 | Lesson 21.2 |
| Chapter 23 | Lesson 23.2 |
Skills to Review:

1. Using a microscope to measure field of view and estimating size
2. Using a ruler to measure in mm, cm, and m, while rounding to the tenths place
3. Finding volume of a regular and irregular object
4. Calculate density of an object
5. Classifying based on similar and different characteristics
6. Construct a graph using independent and dependent variable from data collected, then interpret the graph and make claims with evidence
7. Interpret information from a given chart or data table
Appendix

vi. Metric Conversion Chart

vii. KLEW Chart

viii. The “Bear” Necessities

ix. Bloom’s Taxonomy

x. Costa’s Levels of Questioning
### Metric Conversion Chart

<table>
<thead>
<tr>
<th>Kangaroo</th>
<th>Hopping</th>
<th>Down</th>
<th>Mountains</th>
<th>Drinking</th>
<th>Chocolate</th>
<th>Milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kilometers</td>
<td>Hecto-</td>
<td>Deca-</td>
<td>Meter, liter, gram</td>
<td>Deci-</td>
<td>Centi-</td>
<td>Milli-</td>
</tr>
<tr>
<td>1 meter equals .001 kilometers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0 m=.001 km (the decimal moves 3 places to the left).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0 cm=.00001 km (the decimal moves 5 places to the left when starting in the centimeter column).</td>
<td>If 1 meter, then put decimal after the 1 like “1.0” Move the decimal to the right for anything on the chart to the right of here and to the left for anything on the left of here. (You can start anywhere on the chart.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 meter equals 100 centimeters.</td>
<td>1.0 m=100.0 cm (the decimal moved 2 places to the right).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 meter equals 1000 millimeters.</td>
<td>1.0 m=1000.0 mm (the decimal moved 3 places to the right).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### KLEW Chart

<table>
<thead>
<tr>
<th>K</th>
<th>L</th>
<th>E</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>(What You Know . . . Think Prior Knowledge)</td>
<td>(What You Have Learned)</td>
<td>(What Is The Evidence?)</td>
<td>(What Do You Still Want To Find Out?)</td>
</tr>
</tbody>
</table>

---

The “Bear” Necessities
# A Three Story Intellect!

**Bloom’s Taxonomy**

*The Student will…*

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn specific facts, ideas, vocabulary, remembering/recalling information or specific facts.</td>
<td>Ability to grasp the meaning of material; communicate knowledge; understanding information without relating it to other material.</td>
<td>Ability to use learned material in new and concrete situations; use learned knowledge and interpret previous situations.</td>
<td>Ability to break down material into its component parts and perceive interrelationships.</td>
<td>Ability to put parts together to form a new whole; use elements in new patterns and relationships.</td>
<td>Ability to judge the value of material (statement, novel, poem, report, etc.) for a given purpose; judgment is based on given criteria.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Introduction of knowledge</strong></th>
<th><strong>Practice knowledge learned</strong></th>
<th><strong>Demonstrates mastery of knowledge learned</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level One—the basement</strong></td>
<td><strong>Level Two—the ground floor</strong></td>
<td><strong>Level Three—the penthouse</strong></td>
</tr>
<tr>
<td>By doing the following…</td>
<td>By doing the following…</td>
<td>By doing the following…</td>
</tr>
</tbody>
</table>

**collect, copy, define, describe, examine, find, group, identify, indicate, label, list, locate, match, name, omit, observe, point, provide, quote, read, recall, recite, recognize, repeat, reproduce, say, select, sort, spell, state, tabulate, tell, touch, underline, who, when, where, what, alter, associate calculate, categorize, change, communicate, convert, distinguish, expand, explain, inform, name alternatives, outline, paraphrase, rearrange, reconstruct, relate, restate (own words), summarize, tell the meaning of, translate, understand, verbalize, write**

**collect, copy, define, describe, examine, find, group, identify, indicate, label, list, locate, match, name, omit, observe, point, provide, quote, read, recall, recite, recognize, repeat, reproduce, say, select, sort, spell, state, tabulate, tell, touch, underline, who, when, where, what, alter, associate calculate, categorize, change, communicate, convert, distinguish, expand, explain, inform, name alternatives, outline, paraphrase, rearrange, reconstruct, relate, restate (own words), summarize, tell the meaning of, translate, understand, verbalize, write**

**acquire, adopt, apply, assemble, capitalize, construct, consume, demonstrate, develop, discuss, experiment, formulate, manipulate, organize, relate, report, search, show, solve novel problems, tell consequences, try, use, utilize**

**analyze, arrange, break down, categorize, classify, compare, contrast, deduce, determine, diagram, differentiate, discuss causes, dissect, distinguish, give reasons, order, separate, sequence, survey, take apart, test for, why, alter, build, combine, compose, construct, create, develop, estimate, form a new…, generate, hypothesize, imagine, improve, infer, invent, modify, plan, predict, produce, propose, reorganize, rewrite, revise, simplify, synthesize**

**appraise, argue, assess, challenge, choose, conclude, criticize, critique, debate, decide, defend, discriminate, discuss, document, draw conclusions, editorialize, evaluate, grade, interpret, judge, justify, prioritize, rank, rate, recommend, reject, support, validate, weigh**
### Costa’s Levels of Questioning

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Observation and recall of</td>
<td>• Understanding information</td>
<td>• Seeing patterns</td>
<td>• Using old ideas to create</td>
<td>• Compare and discriminate</td>
<td></td>
</tr>
<tr>
<td>information</td>
<td>• Grasp meaning</td>
<td>• Use methods, concepts,</td>
<td>new ones</td>
<td>between ideas</td>
<td></td>
</tr>
<tr>
<td>• Knowledge of dates, events,</td>
<td>• Translate knowledge into new</td>
<td>theories in new situations</td>
<td>• Generalize from given</td>
<td>• Assess value of</td>
<td></td>
</tr>
<tr>
<td>places</td>
<td>context</td>
<td>• Solve problems using</td>
<td>facts</td>
<td>theories, presentations</td>
<td></td>
</tr>
<tr>
<td>• Knowledge of major ideas</td>
<td>• Interpret facts, compare, contrast</td>
<td>required skills or knowledge</td>
<td>• Relate knowledge from</td>
<td>• Make choices based on</td>
<td></td>
</tr>
<tr>
<td>• Master of subject matter</td>
<td>• Order, group, infer causes</td>
<td></td>
<td>several areas</td>
<td>reasoned argument</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is…?</td>
<td>How would you classify the type of…?</td>
<td>How would you use…?</td>
<td>What is the parts of…?</td>
<td>Do you agree with the</td>
<td></td>
</tr>
<tr>
<td>How is…?</td>
<td>How would you compare/contrast…?</td>
<td>What examples can you find to…?</td>
<td>How is related to…?</td>
<td>actions…? with the outcomes…?</td>
<td></td>
</tr>
<tr>
<td>Where is…?</td>
<td>Will you state or interpret in your</td>
<td>How would you solve_____using</td>
<td>Why do you think…?</td>
<td>What is your opinion of…?</td>
<td></td>
</tr>
<tr>
<td>When did…?</td>
<td>your own words…?</td>
<td>what you have learned…?</td>
<td>What is the theme…?</td>
<td>How would you prove…?</td>
<td></td>
</tr>
<tr>
<td>Why did…?</td>
<td>How would you rephrase the</td>
<td>How would you organize _____to</td>
<td>What is the cause…?</td>
<td>Disprove…?</td>
<td></td>
</tr>
<tr>
<td>How would you describe…?</td>
<td>meaning…?</td>
<td>show…?</td>
<td>Why would it be better if…?</td>
<td>Can you assess the value of</td>
<td></td>
</tr>
<tr>
<td>When did…?</td>
<td>What facts or ideas show…?</td>
<td>How would you show your</td>
<td>Why did they (the character)</td>
<td>importance of…?</td>
<td></td>
</tr>
<tr>
<td>Can you recall…?</td>
<td>What is the main idea of…?</td>
<td>understanding…?</td>
<td>choose…?</td>
<td>Can you assess the value or</td>
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<td>How would you show…?</td>
<td>Which statements support…?</td>
<td>What approach would you use to…</td>
<td>What would you recommend…?</td>
<td>importance of…?</td>
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<tr>
<td>Can you select…?</td>
<td>Can you explain what is happening…?</td>
<td>How would you apply what you</td>
<td>How would you rate the…?</td>
<td>Would it be better if…?</td>
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<tr>
<td>Who were the main…?</td>
<td>what is meant…?</td>
<td>learned to develop…?</td>
<td>What would you cite to defend</td>
<td>Why did they (the character)</td>
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<td>Can you list three…?</td>
<td>What can you say about…?</td>
<td>What other way would you plan to…</td>
<td>the actions…?</td>
<td>choose…?</td>
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<td>Which one…?</td>
<td>Which is the best answer…?</td>
<td>What would result if…?</td>
<td>How would you evaluate…?</td>
<td>What would you recommend…?</td>
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<td>Who was…?</td>
<td>How would you summarize…?</td>
<td>Can you make use of the facts</td>
<td>What would you rate the…?</td>
<td>How could you determine…?</td>
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<td>to…?</td>
<td>What would you rate the…?</td>
<td>What choice would you have?</td>
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<td>What elements would you choose</td>
<td>What would you cite to defend</td>
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<td>to change…?</td>
<td>the actions…?</td>
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<td>What facts would you select to</td>
<td>How would you evaluate…?</td>
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<td>show…?</td>
<td>What would you rate the…?</td>
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<td>What questions would you ask in</td>
<td>What would you cite to defend</td>
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<td>an interview with…?</td>
<td>the actions…?</td>
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<td>How would you evaluate…?</td>
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<td>What would you rate the…?</td>
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<td>What would you rate the…?</td>
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</tbody>
</table>

Skills Demonstrated:
- Observation and recall of information
- Knowledge of dates, events, places
- Knowledge of major ideas
- Master of subject matter

Skills Demonstrated:
- Understanding information
- Grasp meaning
- Translate knowledge into new context
- Interpret facts, compare, contrast
- Order, group, infer causes
- Predict consequences

Skills Demonstrated:
- Use information
- Use methods, concepts, theories in new situations
- Solve problems using required skills or knowledge

Skills Demonstrated:
- Seeing patterns
- Organization of parts
- Recognition of hidden meanings
- Identification of Components

Skills Demonstrated:
- Using old ideas to create new ones
- Generalize from given facts
- Relate knowledge from several areas
- Predict, draw conclusions

Skills Demonstrated:
- Compare and discriminate between ideas
- Assess value of theories, presentations
- Make choices based on reasoned argument

What is…?
How is…?
Where is…?
When did…?
Why did…?
How did…?
How would you describe…?
When did…?
Can you recall…?
How would you show…?
Can you select…?
Who were the main…?
Can you list three…?
Which one…?
Who was…?

What is the parts of…?
How is related to…?
Why do you think…?
What is the theme…?
What motive is there…?
Can you list the parts…?
What inference can you make…?
What conclusions can you draw…?
How would you classify…?
How would you categorize…?
Can you identify the different parts…?
What evidence can you find…?
What is the relationship between…?
Can you make a distinction between…?
What is the function of…?
What ideas justify…?
How would you estimate the results for…?
What facts can you compile…?
Can you construct a model that would change…?
Can you think of an original way for the…?

Do you agree with the actions…?
How would you prove…?
Disprove…?
Can you assess the value or importance of…?
Would it be better if…?
Why did they (the character) choose…?
What would you recommend…?
How would you rate the…?
What would you cite to defend the actions…?
How would you evaluate…?
How could you determine…?
What choice would you have?