Ohio Content Standards: Be^3 Smart

Grade Five - *Science* Model Curriculum Ohio Department of Education

Grade Band Theme: Interconnections within Systems

All Lessons in the program apply to the Science Inquiry and Application standards.

Science Inquiry and Application

During the years of grades 5-8, all students must use the following scientific processes, with appropriate laboratory safety techniques, to construct their knowledge and understanding in all science content areas:

- *Identify questions that can be answered through scientific investigations;*
- *Design and conduct a scientific investigation;*
- *Use appropriate mathematics, tools and techniques to gather data and information;*
- *Analyze and interpret data;*
- *Develop descriptions, models, explanations and predictions;*
- *Think critically and logically to connect evidence and explanations;*
- *Recognize and analyze alternative explanations and predications; and*
- *Communicate scientific procedures and explanations.*

Strand	**Physical Science** **page 175**
Topic	**Light, Sound and Motion**
Content Statement	**Light and sound are forms of energy that behave in predictable ways.**
Content Elaboration	Light can be absorbed by objects, causing them to warm. How much an object's temperature increases depends on the material of the object, the intensity of and the angle at which the light striking its surface, how long the light shines on the object and how much light is absorbed. Investigating and experimenting with temperate changes caused by light striking different surfaces can be virtual or in a lab setting.
Lessons	Lesson 2: Light bulb or Heat Bulb, Lesson 3: Insulation and Air Leaks

National Energy Literacy Principles

1. Energy is a physical quantity that follows precise natural laws. 1.1, 1.2, 1.3, 1.4
2. Physical processes on Earth are the result of energy flow through the Earth system. 2.1
4. Various Sources of energy can be used to power human activities, and often this energy must be transferred from source to destination. 4.1
5. Energy decisions are influenced by economic, political, environmental, and social factors. 5.1, 5.4, 5.6
6. The amount of energy used by human societies depends on many factors. 6.2, 6.4, 6.6, 6.7, 6.8
7. The quality of life of individuals and societies is affected by energy choices. 7.1, 7.3

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Grade Five - *Social Studies* Model Curriculum Ohio Department of Education

Theme	**Regions and People of the Western Hemisphere page 21**
Strand	**Economics**
Topic	**Economic Decision Making and Skills**
Content Statement	**The choices people make have both present and future consequences.**
Content Elaboration	At the personal level, an individual may choose to spend more money on a fuel-efficient automobile now (present consequence is the higher price paid) with the expectation of saving money on gasoline costs in the future (saving money in the future).
Lessons	All lessons

Theme	**Regions and People of the Western Hemisphere page 22**
Strand	**Economics**
Topic	***Scarcity*** There are not enough resources to produce all the goods and services that people desire.
Content Statement	**15. The availability of productive resources (i.e., human resources, capital goods and natural resources) promotes specialization that leads to trade.**
Content Elaboration	*Natural resources* are productive resources supplied by nature (e.g., ores, trees, arable land). *Specialization* is the concentration of production on fewer kinds of goods and services than are consumed. Trade occurs when individuals, regions and countries specialize in what they produce at the lowest opportunity cost and this causes both production and consumption to increase.
Lessons	All lessons

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Grade Five - *Mathematics* Model Curriculum Ohio Department of Education

Domain	**Operations and Algebraic Thinking page 4**
Cluster	***Analyze patterns and relationships.***
Standards	3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.
Instructional Strategies	Have students form ordered pairs and graph them on a coordinate plane. Patterns can be also discerned in graphs. Graphing ordered pairs on a coordinate plane is introduced to students in the Geometry domain where students solve real-world and mathematical problems.
Lessons	Lesson 2: Light bulb or Heat Bulb, Lesson 3: Insulation and Air Leaks

Domain	**Number and Operations in Base Ten page 6**
Cluster	**Understand the place value system.**
Standards	1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. 2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. 3. Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, *e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).* b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. 4. Use place value understanding to round decimals to any place.
Instructional Strategies	In Grade 5, the concept of place value is extended to include decimal values to thousandths. The strategies for Grades 3 and 4 should be drawn upon and extended for whole numbers and decimal numbers. For example, students need to continue to represent, write and state the value of numbers including decimal numbers.
Lessons	Lesson 2: Light bulb or Heat Bulb, Lesson 5: Saving Water and Water Heating, Lesson 6: Appliances and Energy

Domain	Number and Operations – Base Ten page 8
Cluster	**Perform operations with multi-digit whole numbers and with decimals to hundredths.**
Standards	5. Fluently multiply multi-digit whole numbers using the standard algorithm. 6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. 7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
Instructional Strategies	As students developed efficient strategies to do whole number operations, they should also develop efficient strategies with decimal operations.
Lessons	Lesson 2: Light bulb or Heat Bulb, Lesson 5: Saving Water and Water Heating, Lesson 6: Appliances and Energy

Domain	Measurement and Data page 15
Cluster	**Convert like measurement units within a given measurement system.**
Standards	1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
Instructional Strategies	Students should gain ease in converting units of measures in equivalent forms within the same system. To convert from one unit to another unit, the relationship between the units must be known. In order for students to have a better understanding of the relationships between units, they need to use measuring tools in class. The number of units must relate to the size of the unit.
Lessons	Lesson 2: Light bulb or Heat Bulb, Lesson 6: Appliances and Energy

Domain	Geometry page 20
Cluster	**Graph points on the coordinate plane to solve real-world and mathematical problems.**
Standards	1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate). 2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
Instructional Strategies	Students should gain ease in converting units of measures in equivalent forms within the same system. To convert from one unit to another unit, the relationship between the units must be known. In order for students to have a better understanding of the relationships between units, they need to use measuring tools in class. The number of units must relate to the size of the unit.
Lessons	Lesson 2: Light bulb or Heat Bulb, Lesson 6: Appliances and Energy

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Grade Five - *English Language Arts* Model Curriculum Ohio Department of Education

Strand	**Reading: Informational Text** **page 10**
Topic	**Key Ideas and Details**
Standard Statement	1. Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. 2. Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
Content Elaboration	As readers become more strategic, they are able to integrate information from multiple visual and print sources for a full understanding of the content. The ability to access, use and synthesize information from multiple sources enhances learning.
Lessons	All lessons

Strand	**Reading: Informational Text** **page 12**
Topic	**Craft and Structure**
Standard Statement	4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 5 topic or subject area*. 5. Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts. 6. Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.
Content Elaboration	The unique features and organization of informational text support readers in managing information, learning content, interpreting vocabulary, deepening comprehension and understanding author's purposes.
Lessons	All lessons

Strand	**Reading: Informational Text** **page 14**
Topic	**Integration of Knowledge and Ideas**
Standard Statement	7. Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. 9. Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.
Content Elaboration	The ability to access, use and synthesize information from multiple sources enhances the understanding of a topic and expands learning.
Lessons	All lessons

Strand	Reading: Informational Text page 16
Topic	**Range of Reading and Level of Text Complexity**
Standard Statement	10. By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4-5 text complexity band independently and proficiently.
Content Elaboration	The ability to access, use and synthesize information from multiple sources enhances the understanding of a topic and expands learning.
Lessons	All lessons

Strand	Writing page 23
Topic	**Text Types and Purposes**
Standard Statement	2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly. 3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
Content Elaboration	Student writers select structures (narrative, informative or persuasive), use precise language, and choose appropriate tone and style to communicate a point of view and/or purpose to their audience.
Lessons	All lessons journals

Strand	Writing page 28
Topic	**Research to Build and Present Knowledge**
Standard Statement	7. Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. 8. Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. 9. Draw evidence from literary or informational texts to support analysis, reflection, and research.
Content Elaboration	Writers activate prior knowledge and then engage in the process of independent and shared inquiry and research to develop new understandings and create new knowledge. Writers use relevant information to support their analysis, reflection and research.
Lessons	All lesson journals

Strand	**Language** **page 37**
Topic	**Conventions of Standard English**
Standard Statement	1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. 2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
Content Elaboration	Writers and speakers apply the rules and conventions regarding parts of speech, phrases, sentence structure, mechanics and spelling to communicate effectively. These conventions are learned and applied within the contexts of reading, writing, speaking and listening.
Lessons	All lesson journals