

MacGyver Wind Lift: Standards Correlations

Ohio Department of Education Content Standards-Grades 3-6



Third Grade

Earth and Space Science

Topic: Earth's Resources

This topic focuses on Earth's resources. While resources can be living and nonliving, within this strand, the emphasis is on Earth's nonliving resources, such as water, air, rock, soil and the energy resources they represent.

- 3.ESS.1: Earth's nonliving resources have specific properties.
- 3.ESS.2: Earth's resources can be used for energy.
- 3.ESS.3: Some of Earth's resources are limited.

Physical Science

Topic: Matter and Forms of Energy

This topic focuses on the relationship between matter and energy. Matter has specific properties and is found in all substances on Earth. Heat is a familiar form of energy that can change the states of matter

Physical Science

- 3.PS.3: Heat, electrical energy, light, sound and magnetic energy are forms of energy.

Operations & Algebraic Thinking

Topic: Represent and solve problems involving multiplication and division.

- OA.1 Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. (Note: These standards are written with the convention that $a \times b$ means a groups of b objects each; however, because of the commutative property, students may also interpret 5×7 as the total number of objects in 7 groups of 5 objects each).
- OA.2 Interpret whole number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.

Topic: Understand properties of multiplication and the relationship between multiplication and division

- OA.6 Understand division as an unknown-factor problem. For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8

Solve problems involving the four operations and identify and explain patterns in arithmetic.

- OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

Fourth Grade

Earth and Space Science

Topic: Matter and Forms of Energy

This topic focuses on the relationship between matter and energy. Matter has specific properties and is found in all substances on Earth. Heat is a familiar form of energy that can change the states of matter

Earth and Space Science

- 4.ESS.1: Earth's surface has specific characteristics and landforms that can be identified.

Physical Science

Topic: Electricity, Heat and Matter

This topic focuses on the conservation of matter and the processes of energy transfer and transformation, especially as they relate to heat and electrical energy.

- 4.PS.2: Energy can be transferred from one location to another or can be transformed from one form to another.

Operations & Algebraic Thinking

Topic: Use the four operations with whole numbers to solve problems.

- OA.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
- OA.2 Multiply or divide to solve word problems involving multiplicative comparison

Topic: Generate and analyze patterns.

- OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.

Measurement and Data

Topic: Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

- MD.1 Know relative sizes of the metric measurement units within one system of units. Metric units include kilometer, meter, centimeter, and millimeter; kilogram and gram; and liter and milliliter.
- MD.2 Solve real-world problems involving money, time, and metric measurement.

Topic: Represent and interpret data.

- MD.4 Display and interpret data in graphs to solve problems using numbers and operations for this grade.

Fifth Grade

Physical Science

Topic: Light, Sound and Motion

This topic focuses on the forces that affect motion. This includes the relationship between the change in speed of an object, the amount of force applied and the mass of the object. Light and sound are explored as forms of energy that move in predictable ways, depending on the matter through which they move.

- 5.PS.1 The amount of change in movement of an object is based on the mass of the object and the amount of force exerted.

Operations & Algebraic Thinking

Topic: Write and interpret numerical expressions.

- OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

Number & Operations in Base Ten

Topic: Perform operations with multi-digit whole numbers and with decimals to hundredths

- NBT.7 Solve real-world problems by adding, subtracting, multiplying, and dividing decimals using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction, or multiplication and division

Sixth Grade

Physical Science

Topic: Matter and Motion

This topic focuses on the study of foundational concepts of the particulate nature of matter, linear motion, and kinetic and potential energy.

- 6.PS.3 There are two categories of energy: kinetic and potential.
- 6.PS.4 An object's motion can be described by its speed and the direction in which it is moving.

The Number System

Topic: Compute fluently with multi-digit numbers and find common factors and multiples.

- NS.2 Fluently divide multi-digit numbers using a standard algorithm

Nature of Science: Grades 3-5 Strand

Scientific Inquiry, Practice and Applications

- Observe and ask questions about the world that can be answered through scientific investigations.
- Design and conduct scientific investigations using appropriate safety techniques.
- Use appropriate mathematics, tools, and techniques to gather data and information.
- Develop and communicate descriptions, models, explanations and predictions.
- Think critically and ask questions about the observations and explanations of others.
- Communicate scientific procedures and explanations.
- Apply knowledge of science content to real-world challenges.

Science is a way of knowing

- Science is both a body of knowledge and processes to discover new knowledge.
- Science is a way of knowing about the world around us based on evidence from experimentation and observations.
- Science assumes that objects and events occur in consistent patterns that are understandable through measurement and observation.
- Science is both a body of knowledge and processes to discover new knowledge.

Science is a Human Endeavor

- People from many generations and nations contribute to science knowledge.
- People of all cultures, genders, and backgrounds can pursue a career in science.
- Scientists often work in teams.
- Science affects everyday life.
- Science requires creativity and imagination

Scientific Knowledge is Open to Revision in Light of New Evidence

- Science develops theories based on a body of scientific evidence.

- Science explanations can change based on new scientific evidence.

Nature of Science: Grades 6-8 Strand

Scientific Inquiry, Practice and Applications

- Apply knowledge of science content to real-world challenges.
- Design and conduct scientific investigations using appropriate safety techniques.
- 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 predictions.
- Communicate scientific procedures and explanations.
- Design technological/engineering solutions.

Science is a Way of Knowing

- Science is a way of knowing about the world around us based on evidence from experimentation and observations.
- Science assumes that objects and events occur in consistent patterns that are understandable through measurement and observation.
- Science should carefully consider and evaluate all data including outliers.
- Science is based on observable phenomena and empirical evidence.
- Science disciplines share common rules for obtaining and evaluating empirical evidence.

Science is a Human Endeavor

- Individuals from different social, cultural, and ethnic backgrounds work as scientists and engineers.
- Scientists and engineers are guided by habits of mind, such as intellectual honesty, tolerance of ambiguity, skepticism and openness to ideas.
- Scientists and engineers rely on human qualities such as persistence, precision, reasoning, imagination, logic and creativity.

Scientific Knowledge is Open to Revision

- Science explanations are subject to revision and improvement in light of additional scientific evidence or new understanding of scientific evidence

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Model with mathematics.
4. Use appropriate tools strategically.
5. Attend to precision.
6. Look for and make use of structure.
7. Look for and express regularity in repeated reasoning