Alignment of NH Science and Math Frameworks with Lessons

The standards included under each lesson have been selected because we feel that they are well-aligned with that lesson. This is by no means a comprehensive list, and other standards can be addressed by the lesson as well. For science, the standards are listed first by domain (i.e., Science Process Skills), then by strand number (i.e., SPS 1), and finally by grade level (i.e., 8 or 11). For math, the standards are listed first by strand (i.e., N&O) and then by grade level (6-8).

The entire *K-12 Science Literacy New Hampshire Curriculum Framework* can be found at: http://www.education.nh.gov/instruction/curriculum/science/documents/framework.pdf.

The entire *K-12 Mathematics New Hampshire Curriculum Framework* can be found at: http://www.education.nh.gov/instruction/curriculum/math/documents/framwork.pdf.

Science domain abbreviations

SPS = Science Process Skills

LS = Life Science

Math domain abbreviations

N&O = Numbers and Operations

F&A = Functions and Algebra

PRP = Problem Solving, Reasoning and Proof

CCR = Communications, Connections and Representations

Getting to Know You

SPS1:8:1.3 Investigate similarities and differences noted when making observations.

SPS3:11:2.8 Analyze global, social, cultural, political, economic and environmental linkages.

LS5:11:1.1 Describe ways in which technology has increased our understanding of the life sciences.

Birds Fly From Here to Where?

SPS3:8:1.2 Work collectively within a group toward a common goal.

SPS3:11:2.8 Analyze global, social, cultural, political, economic and environmental linkages.

SPS4:8:6.3 Articulate understanding of content through personal interaction and sharing with peers.

LS5:11:1.1 Describe ways in which technology has increased our understanding of the life sciences.

LS5:11:3.1 Describe ways technology can support and improve our understanding of environmental issues.

Hunt and Peck

SPS1:8:3.2 Use appropriate tools to gather data as part of an investigation (e.g., ruler, meter stick, thermometer, spring scale, graduated cylinder, calipers, balance, probes, microscopes).

SPS1:8:4.1 Use appropriate tools (including computer hardware and software) to collect, organize, represent, analyze and explain data.

SPS1:11:3.3 Compile and organize data, using appropriate units.

SPS1:11:4.1 Compile and display data, evidence and information by hand and computer, in a variety of formats, including diagrams, flow charts, tables, graphs and scatter plots.

SPS3:8:1.2 Work collectively within a group toward a common goal.

Message in a Song

SPS1:8:1.7 Ask questions about relationships between and among observable variables.

SPS1:8:5.1 Determine if the results of an experiment support or refute the scientific idea tested.

SPS1:11:1.1 Ask questions about relationships among variables that can be observed directly as well as those that cannot.

SPS1:11:2.2 State a hypothesis and prediction based on available evidence and background information.

SPS1:11:5.1 Explain how data support or refute the hypothesis or prediction.

SPS3:11:1.2 Identify global researchers in a field of interest.

LS2:8:1.1 Explain how changes in environmental conditions can affect the survival of individual organisms and an entire species.

Bye-Bye Birdie?

SPS1:8:4.1 Use appropriate tools (including computer hardware and software) to collect, organize, represent, analyze and explain data.

SPS1:8:4.3 Draw appropriate conclusions regarding the scientific question under investigation, based on the data collected.

SPS1:8:1.7 Ask questions about relationships between and among observable variables.

SPS1:8:5.3 Determine what additional information would be helpful in answering the scientific question.

SPS1:11:4.1 Compile and display data, evidence and information by hand and computer, in a variety of formats, including diagrams, flow charts, tables, graphs and scatter plots.

SPS1:11:1.1 Ask questions about relationships among variables that can be observed directly as well as those that cannot.

SPS1:12:4.1 Interpret patterns and trends in data, and infer or calculate linear and non-linear relationships among variables.

Migration Math

N&O:6:3 Demonstrates conceptual understanding of mathematical operations by adding and subtracting positive fractions and integers; and multiplying and dividing fractions and decimals.

N&O:6:4 Accurately solves problems involving single or multiple operations on fractions, or decimals; and addition or subtraction of integers; percent of a whole; or problems involving greatest common factor or least common multiple.

PRP:8:1 Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content and be able to:

- Use problem-solving strategies appropriately and effectively for a given situation.
- Determine, collect and organize the relevant information needed to solve real-world problems.
- Apply integrated problem-solving strategies to solve problems in the physical, natural, and social sciences and in pure mathematics.
- Use technology when appropriate to solve problems.
- Reflect on solutions and the problem-solving process for a given situation and refine strategies as needed.

CCR:8:3 Students will recognize, explore, and develop mathematical connections and be able to:

- Connect new mathematical ideas to those already studied and build upon them.
- Understand that many real-world applications require an understanding of mathematical concepts.
- Explain in oral and written form the relationships between a real-world problem and an appropriate mathematical model.
- Explain in oral and written form the relationships among various mathematical concepts.

Finding Food in the Forest

SPS1:8:4.3 Draw appropriate conclusions regarding the scientific question under investigation, based on the data collected.

N&O:6:2 Demonstrates understanding of the relative magnitude of numbers by ordering or comparing numbers with rational numbers within and across number formats.

N&O:6:3 Demonstrates conceptual understanding of mathematical operations by adding and subtracting positive fractions and integers; and multiplying and dividing fractions and decimals.

N&O:6:4 Accurately solves problems involving single or multiple operations on fractions, or decimals; and addition or subtraction of integers; percent of a whole; or problems involving greatest common factor or least common multiple.

N&O:7:1 Demonstrates conceptual understanding of rational numbers with respect to percents as a means of comparing the same or different parts of the whole when the wholes vary in magnitude; and percents as a way of expressing multiples of a number using models, explanations, or other representations.

PRP:8:1 Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content and be able to:

- Use problem-solving strategies appropriately and effectively for a given situation.
- Determine, collect and organize the relevant information needed to solve real-world problems.
- Apply integrated problem-solving strategies to solve problems in the physical, natural, and social sciences and in pure mathematics.
- Use technology when appropriate to solve problems.
- Reflect on solutions and the problem-solving process for a given situation and refine strategies as needed.

CCR:8:3 Students will recognize, explore, and develop mathematical connections and be able to:

- Connect new mathematical ideas to those already studied and build upon them.
- Understand that many real-world applications require an understanding of mathematical concepts.
- Explain in oral and written form the relationships between a real-world problem and an appropriate mathematical model.
- Explain in oral and written form the relationships among various mathematical concepts.

Calorie Counting is for the Birds

N&O:6:3 Demonstrates conceptual understanding of mathematical operations by adding and subtracting positive fractions and integers; and multiplying and dividing fractions and decimals.

N&O:6:4 Accurately solves problems involving single or multiple operations on fractions, or decimals; and addition or subtraction of integers; percent of a whole; or problems involving greatest common factor or least common multiple.

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- Use problem-solving strategies appropriately and effectively for a given situation.
- Determine, collect and organize the relevant information needed to solve real-world problems.
- Apply integrated problem-solving strategies to solve problems in the physical, natural, and social sciences and in pure mathematics.
- Use technology when appropriate to solve problems.
- Reflect on solutions and the problem-solving process for a given situation and refine strategies as needed.

CCR:8:3 Students will recognize, explore, and develop mathematical connections and be able to:

- Connect new mathematical ideas to those already studied and build upon them.
- Understand that many real-world applications require an understanding of mathematical concepts.
- Explain in oral and written form the relationships between a real-world problem and an appropriate mathematical model.
- Explain in oral and written form the relationships among various mathematical concepts.

Energy Expenditures

SPS1:8:4.3 Draw appropriate conclusions regarding the scientific question under investigation, based on the data collected.

N&O:10:4 Accurately solves problems involving rational numbers within mathematics, across content strands, disciplines or contexts.

F&A:10:3 Demonstrates conceptual understanding of algebraic expressions by solving problems involving algebraic expressions, by simplifying expressions, by evaluating expressions, or by translating problem situations into algebraic expressions.

PRP:HS:1 Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content and be able to expand the repertoire of problem-solving strategies and use those strategies in more sophisticated ways; use technology whenever appropriate to solve real-world problems; and formulate and redefine problem situations needed to arrive at appropriate conclusions.

CCR:HS:3 Students will recognize, explore, and develop mathematical connections and be able to explain in oral or written form how mathematics connects to other disciplines, to daily life, careers, and society, and explain multiple approaches that lead to equivalent results when solving problems.