

Project WILD and WILD Aquatic

K-12 Curriculum & Activity Guide

Correlations to New Hampshire's Curriculum
Framework for Mathematics

December 2008



project WILD



Welcome Educators

New Hampshire's curriculum standards have undergone substantial change in response to the federal No Child Left Behind Act. In an effort to make it easier for teachers and non-formal educators to use the Project WILD and Project WILD Aquatic manuals correlations have been made between the Project WILD activities and the revised New Hampshire Mathematics Frameworks. The correlations are designed to assist educators, especially classroom teachers, curriculum specialists and curriculum committees in reviewing and revising their mathematics curricula.

Special thanks go to Esther Cowles and Erin Hollingsworth of New Hampshire Project Learning Tree for the overall coordination of the joint projects WILD, WET and Learning Tree correlations project; Project WET for its support, and to the many teachers and education specialists that reviewed the correlation documents.

In New Hampshire Project WILD is sponsored by the N.H. Fish and Game Department. For more information about Project WILD contact Mary Goodyear, N.H. Fish and Game, 11 Hazen Drive, Concord, NH 03301; 603 271-3211; mary.goodyear@wildlife.nh.gov

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HOW TO USE THIS HANDBOOK

The purpose of this handbook is to assist educators who are reviewing and revising their mathematics curricula. The primary audience is classroom teachers, curriculum specialists, and curriculum committees. The handbook is divided into three sections, as follows:

- **PART I lists each Project WILD and WILD Aquatic activity in the *K-12 Curriculum and Activity Guide*, followed by the standards from the NH Mathematics Curriculum Framework (K-12) with which it is aligned.**

Use Part I if you have a particular WILD activity in mind and want to know how it correlates with the state curriculum standards. To find an appropriate activity to meet your needs, use the Topic Index in the Appendices of the Project WILD and WILD Aquatic manuals and select potential activities to supplement your unit. To determine which state standards correlate with the selected activities go to each of the activities in the handbook. All the WILD and WILD Aquatic activities are listed in the Table of Contents of each of the manuals in the order they are found in the manual. That is the same order in which they are found in the handbook. Each WILD activity in the handbook is followed by the strand and stem for each framework that is correlated to it

- **PART II lists individual state curriculum standards from the NH Mathematics Curriculum Framework (K-12), followed by the Project WILD and WILD Aquatic activities that meet the individual standards.**

Use Part II if you have a particular curriculum standard in mind and want to find an activity that supports it. Read about any listed activities in the appropriate WILD or WILD Aquatic manual to determine the one that best meets your needs. Remember, there is an alphabetical listing of activities on the last pages of both Project WILD manuals.

- **PART III is a chart that lists each WILD and WILD Aquatic activity and the standards from the NH Mathematics Curriculum Framework (K-12) with which each activity is aligned.**

Note: Throughout this handbook, the strands are abbreviated as follows:

N&O – Number and Operations

G&M – Geometry and Measurement

F&A – Functions and Algebra

DSP – Data, Statistics, and Probability

PRP – Problem Solving, Reasoning, and Proof

CCR – Communication, Connections, and Representations

METHODOLOGY

2008 Mathematics Correlation

New Hampshire's curriculum standards have undergone substantial change in response to the federal No Child Left Behind Act. The former state standards were written for the end of grades three, six and ten. To meet new formalized assessment requirements, the NH Mathematics Curriculum Framework (K-12), approved in June 2006, addresses content and skills, and is divided into grade level expectations (GLEs) for grades K-8, and grade span expectations (GSEs) at the high school level.

The NH Mathematics Curriculum Framework (K-12) contains the following components:

- **Strand:** There are six strands that are consistent across grade levels: Number and Operations (N&O), Geometry and Measurement (G&M), Functions and Algebra (F&A), Data, Statistics, and Probability (DSP), Problem Solving, Reasoning, and Proof (PRP), and Communication, Connections, and Representations (CCR).
- **Stem:** These communicate the main curricular focus, or big ideas, at each grade level, and are the same or similar across grades K-12.

For each strand, the associated proficiencies were consulted to help inform the degree of correlation of the broader strand with each activity; a match, of at least one proficiency was required to indicate a correlation. The following elements of each activity helped to focus the correlation process:

- The subject identifier in the sidebar determined whether the activity was correlated to the mathematics frameworks; if math is not listed, the activity was not addressed.
- The activity objectives in the sidebar and the activity description informed which curriculum and proficiency standard(s) are related to the activity.

Note: Any attempt to correlate universal curriculum standards and a single curriculum program involves subjectivity. Two important steps were taken to limit bias. First, the author applied this rigorous methodology to determine correlation. Second, drafts were peer-reviewed by Project WILD-trained elementary, middle, and high school teachers. Reviewers' most common finding was that Project WILD activities lend themselves to modification, and in so doing, would meet many more standards than indicated. The Project WILD coordinator chose, however, to correlate based on a strict interpretation of the activities, as they are written.

Project WILD Activities

Adaptation Artistry

NONE

And the Wolf Wore Shoes

NONE

Animal Charades

NONE

Animal Poetry

NONE

Ants on a Twig

NONE

Arctic Survival

NONE

Back from the Brink

NONE

Bearly Growing

M:N&O:4 – Accurately solves problems.

M:F&A:2 – Demonstrates understanding of linear and nonlinear relationships and functions.

M:DSP:1 – Interprets a given representation to answer question related to the data, or to analyze the data to formulate conclusions, make predictions, and/or solve problems.

M:CCR:2 – Students will create and use representations to communicate mathematical ideas and to solve problems. (*See Appendix for grade-level specifics.*)

Beautiful Basics

NONE

Bird Song Survey

NONE

Birds of Prey

M:F&A:2 – Demonstrates understanding of linear and nonlinear relationships and functions.

M:DSP:1 – Interprets a given representation to answer questions related to the data, or to analyze the data to formulate conclusions, make predictions, and/or solve problems.

M:CCR:1 – Students will communicate their understanding of mathematics. (*See Appendix for grade-level specifics.*)

M:CCR:2 – Students will create and use representations to communicate mathematical ideas and to solve problems. (*See Appendix for grade-level specifics.*)

M:CCR:3 – Students will recognize, explore, and develop mathematical connections. (*See Appendix for grade-level specifics.*)

Bottleneck Genes

NONE

Cabin Conflict

NONE

Can Do!

NONE

Career Critters

NONE

Carrying Capacity

NONE

Cartoons and Bumper Stickers

NONE

Changing Attitudes

NONE

Changing Societies

NONE

Changing the Land

NONE

Checks and Balances

M:N&O:4 – Accurately solves problems.

M:DSP:5 – Solves problems to determine the experimental or theoretical probability of an event.

M:CCR:3 – Students will recognize, explore, and develop mathematical connections.
(*See Appendix for grade-level specifics.*)

Classroom Carrying Capacity

NONE

Color Crazy

NONE

Deer Crossing

NONE

Deer Dilemma

NONE

Does Wildlife Sell?

NONE

Drawing on Nature

NONE

Dropping in on Deer

M:N&O:4 – Accurately solves problems.

M:N&O:7 – Makes estimates.

M:G&M:6 – Demonstrates understanding of one, two, and three-dimensional measurements, including length/height, radius, diameter, circumference, perimeter, area, surface area, volume, and the use of trigonometric formulas to find these measures.

M:CCR:3 – Students will recognize, explore, and develop mathematical connections.
(*See Appendix for grade-level specifics.*)

Eco-Enrichers

NONE

Ecosystem Facelift

NONE

Energy Pipeline

M:DSP:1 – Interprets a given representation to answer questions related to the data, or to analyze the data to formulate conclusions, make predictions, and/or solve problems.

M:DSP:2 – Analyzes patterns, trends, or distributions in data in a variety of contexts.

Enviro-Ethics

NONE

Environmental Barometer

NONE

Ethi-Reasoning

NONE

Ethi-Thinking

NONE

Everybody Needs a Home

NONE

Fire Ecologies

NONE

First Impressions

NONE

Flip the Switch for Wildlife

NONE

For Your Eyes Only

NONE

Forest in a Jar

NONE

From Bison to Bread: The American Prairie

NONE

Good Buddies

NONE

Graphananimal

M:DSP:3 – Organizes and displays data; identifies or describes elements of representations that best display a given set of data or situation.

M:CCR:2 – Students will create and use representations to communicate mathematical ideas and to solve problems. (*See Appendix for grade-level specifics.*)

Grasshopper Gravity

NONE

Habitat Lap Sit

NONE

Habitat Rummy

NONE

Habitacks

NONE

Habitrekking

NONE

Hazardous Links, Possible Solutions

NONE

Here Today, Gone Tomorrow

NONE

History of Wildlife Management

NONE

How Many Bears Can Live in This Forest?

M:N&O:1 – Demonstrates understanding of rational numbers.

M:N&O:4 – Accurately solves problems.

M:CCR:3 – Students will recognize, explore, and develop mathematical connections.
(*See Appendix for grade-level specifics.*)

The Hunter

NONE

I'm Thirsty

M:N&O:4 – Accurately solves problems.

M:G&M:7 – Demonstrates understanding of measurable attributes, measures and uses units of measure appropriately and consistently, and makes accurate conversions when solving problems.

M:PRP:1 – Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content. (*See Appendix for grade-level specifics.*)

M:CCR:3 – Students will recognize, explore, and develop mathematical connections.
(See Appendix for grade-level specifics.)

Improving Wildlife Habitat in the Community

NONE

Interview a Spider

NONE

Know Your Legislation: What's In It for Wildlife?

NONE

Learning to Look, Looking to See

NONE

Let's Talk Turkey

NONE

Litter We Know

NONE

Lobster in Your Lunch Box

M:N&O:1 – Demonstrates understanding of rational numbers.

M:N&O:4 – Accurately solves problems.

Make A Coat!

NONE

Microtrek Treasure Hunt

NONE

Migration Barriers

NONE

Move Over Rover

NONE

Museum Search for Wildlife

NONE

Muskox Maneuvers

NONE

My Kingdom for a Shelter

NONE

No Water Off a Duck's Back

M:N&O:2 – Demonstrates understanding of the relative magnitude of numbers.

M:N&O:7 – Makes estimates.

M:G&M:6 – Demonstrates understanding of one, two and three dimensional measurements, including length/height, radius, diameter, circumference, perimeter, area, surface area, volume, and the use of trigonometric formulas to find these measures.

M:G&M:7 – Demonstrates understanding of measurable attributes, measures and uses units of measure appropriately and consistently, and makes accurate conversions when solving problems.

M:CCR:3 – Students will recognize, explore, and develop mathematical connections.
(See Appendix for grade-level specifics.)

Noisy Neighbors

NONE

Oh Deer!

M:DSP:1 – Interprets a given representation to answer questions related to the data, or to analyze the data to formulate conclusions, make predictions, and/or solve problems.

M:DSP:2 – Analyzes patterns, trends, or distributions in data in a variety of contexts.

M:DSP:3 – Organizes and displays data; identifies or describes elements of representations that best display a given set of data or situation.

M:CCR:2 – Students will create and use representations to communicate mathematical ideas and to solve problems. *(See Appendix for grade-level specifics.)*

M:CCR:3 – Students will recognize, explore, and develop mathematical connections. *(See Appendix for grade-level specifics.)*

Owl Pellets

NONE

Pay to Play

NONE

Philosophical Differences

NONE

A Picture Is Worth a Thousand Words

NONE

Planning for People and Wildlife

NONE

Planting Animals

NONE

Playing Lightly on the Earth

NONE

Polar Bears in Phoenix?

NONE

The Power of a Song

NONE

Prairie Memoirs

NONE

Pro and Con: Consumptive and Nonconsumptive Uses

NONE

Quick-Frozen Critters

NONE

Rainfall and the Forest

NONE

Rare Bird Eggs for Sale

NONE

Riparian Zone

NONE

Saturday Morning Wildlife Watching

NONE

Seed Need

M:DSP:3 – Organizes and displays data; identifies or describes elements of representations that best display a given set of data or situation.

Seeing Is Believing!

NONE

Shrinking Habitat

NONE

Smokey Bear Said What?

NONE

Spider Web Geometry

M:G&M:1 – Uses properties or attributes to identify, describe, classify, or distinguish among polygons and circles.

M:G&M:2 – Applies theorems or relationships to solve problems.

M:PRP:2 – Students will use mathematical reasoning and proof. (*See Appendix for grade-level specifics.*)

Stormy Weather

NONE

Surprise Terrarium

NONE

Sustainability: Then, Now, Later

NONE

The Thicket Game

NONE

Time Lapse

NONE

To Zone or Not to Zone

NONE

Too Close for Comfort

NONE

Tracks!

NONE

Turkey Trouble

M:N&O:4 – Accurately solves problems.

M:F&A:2 – Demonstrates understanding of linear and nonlinear relationships and functions.

M:DSP:2 – Analyzes patterns, trends, or distributions in data in a variety of contexts.

M:PRP:1 – Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content. *(See Appendix for grade-level specifics.)*

M:CCR:2 – Students will create and use representations to communicate mathematical ideas and to solve problems. *(See Appendix for grade-level specifics.)*

M:CCR:3 – Students will recognize, explore, and develop mathematical connections.
(See Appendix for grade-level specifics.)

Urban Nature Search

NONE

We're in this Together

NONE

What Bear Goes Where?

NONE

What Did Your Lunch Cost Wildlife?

NONE

What You Wear Is What They Were

NONE

What's for Dinner?

NONE

What's That, Habitat?

NONE

What's Wild?

NONE

Which Niche?

NONE

Who Fits Here?

NONE

Wild Bill's Fate

NONE

Wild Words

NONE

Wildlife Bibliography

NONE

Wildlife in National Symbols

NONE

Wildlife Is Everywhere!

NONE

Wildlife Issues: Community Attitude Survey

NONE

Wildlife on Coins and Stamps

NONE

Wildlife Research

NONE

Wildwork

NONE

World Travelers

M:DSP:6 – Decides the most effective method to collect the data necessary to answer a question or hypothesis; collects, organizes and appropriately displays the data to draw conclusions, and when appropriate makes predictions, asks new questions, and makes connections to real-world situations.

M:CCR:2 – Students will create and use representations to communicate mathematical ideas and to solve problems. (*See Appendix for grade-level specifics.*)

Project WILD Aquatic Activities

Alice in Waterland

M:N&O:7 – Makes estimates.

M:DSP:3 – Organizes and displays data; identifies or describes elements of representations that best display a given set of data or situation.

Aqua Words

NONE

Aquatic Roots

NONE

Aquatic Times

NONE

Are You Me?

NONE

Blue-Ribbon Niche

NONE

Dam Design

NONE

Designing a Habitat

NONE

Dragonfly Pond

NONE

Eat and Glow

M:G&M:7 – Demonstrates understanding of measurable attributes, measures and uses units of measure appropriately and consistently, and makes accurate conversions when solving problems.

M:DSP:6 – Decides the most effective method to collect the data necessary to answer a question or hypothesis; collects, organizes and appropriately displays the data; analyzes the data to draw conclusions, and when appropriate makes predictions, asks new questions, and makes connections to real-world situations.

M:CCR:2 – Students will create and use representations to communicate mathematical ideas and to solve problems. (*See Appendix for grade-level specifics.*)

Edge of Home

NONE

Facts and Falsehoods

NONE

Fashion A Fish

NONE

Fishy Who's Who

NONE

The Glass Menagerie

NONE

Hooks and Ladders

NONE

How Wet Is Our Planet?

M:N&O:1 – Demonstrates understanding of rational numbers.

M:N&O:2 – Demonstrates understanding of the relative magnitude of numbers.

M:N&O:4 – Accurately solves problems.

M:G&M:7 – Demonstrates understanding of measurable attributes, measures and uses units of measure appropriately and consistently, and makes accurate conversions when solving problems.

M:PRP:1 – Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content. (*See Appendix for grade-level specifics.*)

Kelp Help

NONE

Living Research: Aquatic Heroes and Heroines

NONE

Marsh Munchers

NONE

Mermaids and Manatees

NONE

Micro Odyssey

NONE

Migration Headache

NONE

Net Gain, Net Effect

M:DSP:1 – Interprets a given representation to answer questions related to the data, or to analyze the data to formulate conclusions, make predictions, and/or solve problems.

M:DSP:3 – Organizes and displays data; identifies or describes elements of representations that best display a given set of data or situation.

Plastic Jellyfish

M:DSP:3 – Organizes and displays data; identifies or describes elements of representations that best display a given set of data or situation.

M:CCR:2 – Students will create and use representations to communicate mathematical ideas and to solve problems. *(See Appendix for grade-level specifics.)*

Pond Succession

NONE

Puddle Wonders!

M:N&O:4 – Accurately solves problems.

M:G&M:6 – Demonstrates understanding of one, two, and three-dimensional measurements, including length/height, radius, diameter, circumference, perimeter, area, surface area, volume, and the use of trigonometric formulas to find these measures.

M:G&M:7 – Demonstrates understanding of measurable attributes, measures and uses units of measure appropriately and consistently, and makes accurate conversions when solving problems.

M:G&M:9 – Demonstrates understanding of spatial relationships and solves problems using location and position.

M:G&M:10 – Demonstrates conceptual understanding of spatial reasoning and visualization.

M:PRP:1 – Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content. *(See Appendix for grade-level specifics.)*

M:CCR:1 – Students will communicate their understanding of mathematics. *(See Appendix for grade-level specifics.)*

Riparian Retreat

NONE

Sea Turtles International

NONE

Silt: A Dirty Word

NONE

Sockeye Scents

NONE

Something's Fishy Here!

NONE

To Dam or Not To Dam

NONE

Turtle Hurdles

NONE

Water Canaries

NONE

Water Plant Art

NONE

Water We Eating?

NONE

Water Wings

NONE

Water's Going On?

M:N&O:4 – Accurately solves problems.

M:N&O:7 – Makes estimates.

M:G&M:8 – Determines elapsed and accrued time.

Watered-Down History

NONE

Watershed

M:N&O:4 – Accurately solves problems.

M:G&M:2 – Applies theorems or relationships to solve problems.

M:G&M:6 – Demonstrates understanding of one, two, and three dimensional measurements, including length/height, radius, diameter, circumference, perimeter, area, surface area, volume, and the use of trigonometric formulas to find these measures.

M:PRP:1 – Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content. *(See Appendix for grade-level specifics.)*

M:CCR:3 – Students will recognize, explore, and develop mathematical connections. *(See Appendix for grade-level specifics.)*

Wetland Metaphors

NONE

Whale of a Tail

M:N&O:7 – Makes estimates.

M:G&M:5 – Demonstrates understanding and applies concepts of similarity.

M:G&M:7 – Demonstrates understanding of measurable attributes, measures and uses units of measure appropriately and consistently, and makes accurate conversions when solving problems.

What's In The Air?

M:N&O:1 – Demonstrates understanding of rational numbers.

M:DSP:6 – Decides the most effective method to collect the data necessary to answer a question or hypothesis; collects, organizes and appropriately displays the data; analyzes the data to draw conclusions, and when appropriate makes predictions, asks new questions, and makes connections to real-world situations.

What's In The Water?

M:DSP:3 – Organizes and displays data; identifies or describes elements of representations that best display a given set of data or situation.

M:CCR:2 – Students will create and use representations to communicate mathematical ideas and to solve problems. (*See Appendix for grade-level specifics.*)

When a Whale is Right

NONE

Where Does Water Run?

M:N&O:4 – Accurately solves problems.

M:G&M:6 – Demonstrates understanding of one, two, and three-dimensional measurements, including length/height, radius, diameter, circumference, perimeter, area, surface area, volume, and the use of trigonometric formulas to find these measures.

M:G&M:7 – Demonstrates understanding of measurable attributes, measures and uses units of measure appropriately and consistently, and makes accurate conversions when solving problems.

M:PRP:1 – Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content. *(See Appendix for grade-level specifics.)*

M:CCR:3 – Students will recognize, explore, and develop mathematical connections. *(See Appendix for grade-level specifics.)*

Where Have All The Salmon Gone?

M:DSP:1 – Interprets a given representation to answer questions related to the data, or to analyze the data to formulate conclusions, make predictions, and/or solve problems.

M:DSP:2 – Analyzes patterns, trends, or distributions in data in a variety of contexts.

M:DSP:3 – Organizes and displays data; identifies or describes elements of representations that best display a given set of data or situation.

M:CCR:1 – Students will communicate their understanding of mathematics. *(See Appendix for grade-level specifics.)*

M:CCR:2 – Students will create and use representations to communicate mathematical ideas and to solve problems. *(See Appendix for grade-level specifics.)*

NH Curriculum Framework for Mathematics For Project WILD and WILD Aquatic K-12

Number and Operations

M:N&O:1 – Demonstrates understanding of rational numbers.

Related WILD Activities

- How Many Bears Can Live in This Forest?
- Lobster in Your Lunch Box

Related WILD Aquatic Activities

- How Wet Is Our Planet?
- What's In The Air?

M:N&O:2 – Demonstrates understanding of the relative magnitude of numbers.

Related WILD Activities

- No Water Off a Duck's Back

Related WILD Aquatic Activities

- How Wet Is Our Planet?

M:N&O:3 – Demonstrates understanding of mathematical operations.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- *None*

M:N&O:4 – Accurately solves problems.

Related WILD Activities

- Bearly Growing
- Checks and Balances
- Dropping in on Deer
- How Many Bears Can Live in This Forest?
- I'm Thirsty
- Lobster in Your Lunch Box
- Turkey Trouble

Related WILD Aquatic Activities

- How Wet Is Our Planet?
- Puddle Wonders!
- Watershed
- Water's Going On?
- Where Does Water Run?

M:N&O:5 – Demonstrates understanding of monetary value.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- *None*

M:N&O:6 – Uses a variety of mental computation strategies to solve problems and determine the reasonableness of answers.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- *None*

M:N&O:7 – Makes estimates.

Related WILD Activities

- Dropping in on Deer
- No Water Off a Duck's Back

Related WILD Aquatic Activities

- Alice in Waterland
- Water's Going On?
- Whale of a Tail

M:N&O:8 – Applies properties of numbers and field properties to solve problems and simplify computations.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- *None*

Geometry and Measurement

M:G&M:1 – Uses properties or attributes to identify, describe, classify, or distinguish among polygons and circles.

Related WILD Activities

- Spider Web Geometry

Related WILD Aquatic Activities

- *None*

M:G&M:2 – Applies theorems or relationships to solve problems.

Related WILD Activities

- Spider Web Geometry

Related WILD Aquatic Activities

- Watershed

M:G&M:3 – Uses properties or attributes to identify, compare, or describe three-dimensional shapes.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- *None*

M:G&M:4 – Demonstrates understanding and applies concepts of congruency.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- *None*

M:G&M:5 – Demonstrates understanding and applies concepts of similarity.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- Whale of a Tail

M:G&M:6 – Demonstrates understanding of one, two, and three-dimensional measurements, including length/height, radius, diameter, circumference, perimeter, area, surface area, volume, and the use of trigonometric formulas to find these measures.

Related WILD Activities

- Dropping in on Deer
- No Water Off a Duck's Back

Related WILD Aquatic Activities

- Puddle Wonders!
- Watershed
- Where Does Water Run?

M:G&M:7 – Demonstrates understanding of measurable attributes, measures and uses units of measure appropriately and consistently, and makes accurate conversions when solving problems.

Related WILD Activities

- I'm Thirsty
- No Water Off a Duck's Back

Related WILD Aquatic Activities

- Eat and Glow
- How Wet Is Our Planet?
- Puddle Wonders!
- Whale of a Tail
- Where Does Water Run?

M:G&M:8 – Determines elapsed and accrued time.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- Water's Going On?

M:G&M:9 – Demonstrates understanding of spatial relationships and solves problems using location and position.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- Puddle Wonders!

M:G&M:10 – Demonstrates conceptual understanding of spatial reasoning and visualization.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- Puddle Wonders!

Functions and Algebra

M:F&A:1 – Identifies, generalizes, and extends to specific cases a variety of patterns and/or sequences.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- *None*

M:F&A:2 – Demonstrates understanding of linear and nonlinear relationships and functions.

Related WILD Activities

- Bearly Growing
- Birds of Prey
- Turkey Trouble

Related WILD Aquatic Activities

- *None*

M:F&A:3 – Demonstrates understanding of algebraic expressions.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- *None*

M:F&A:4 – Demonstrates conceptual understanding of equality.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- *None*

Data, Statistics, and Probability

M:DSP:1 – Interprets a given representation to answer questions related to the data, or to analyze the data to formulate conclusions, make predictions, and/or solve problems.

Related WILD Activities

- Bearly Growing
- Birds of Prey
- Energy Pipeline
- Oh Deer!

Related WILD Aquatic Activities

- Net Gain, Net Effect
- Where Have All The Salmon Gone?

M:DSP:2 – Analyzes patterns, trends, or distributions in data in a variety of contexts.

Related WILD Activities

- Energy Pipeline
- Oh Deer!
- Turkey Trouble

Related WILD Aquatic Activities

- Where Have All The Salmon Gone?

M:DSP:3 – Organizes and displays data; identifies or describes elements of representations that best display a given set of data or situation.

Related WILD Activities

- Graphanimal
- Oh Deer!
- Seed Need

Related WILD Aquatic Activities

- Alice in Waterland
- Net Gain, Net Effect
- Plastic Jellyfish
- What's In The Water?
- Where Have All The Salmon Gone?

M:DSP:4 – Uses counting techniques to solve problems.

Related WILD Activities

- *None*

Related WILD Aquatic Activities

- *None*

M:DSP:5 – Solves problems to determine the experimental or theoretical probability of an event.

Related WILD Activities

- Checks and Balances

Related WILD Aquatic Activities

- *None*

M:DSP:6 – Decides the most effective method to collect the data necessary to answer a question or hypothesis; collects, organizes and appropriately displays the data; analyzes the data to draw conclusions, and when appropriate makes predictions, asks new questions, and makes connections to real-world situations.

Related WILD Activities

- World Travelers

Related WILD Aquatic Activities

- Eat and Glow
- What's In The Air?

Problem Solving, Reasoning, and Proof

M:PRP:1 – Students will use problem-solving strategies to investigate and understand increasingly complex mathematical content. (*See Appendix for grade-level specifics.*)

Related WILD Activities

- I'm Thirsty
- Turkey Trouble

Related WILD Aquatic Activities

- How Wet Is Our Planet?
- Puddle Wonders!
- Watershed
- Where Does Water Run?

M:PRP:2 – Students will use mathematical reasoning and proof. (*See Appendix for grade-level specifics.*)

Related WILD Activities

- Spider Web Geometry

Related WILD Aquatic Activities

- *None*

Communication, Connections, and Representations

M:CCR:1 – Students will communicate their understanding of mathematics. (*See Appendix for grade-level specifics.*)

Related WILD Activities

- Birds of Prey

Related WILD Aquatic Activities

- Puddle Wonders!
- Where Have All The Salmon Gone?

M:CCR:2 – Students will create and use representations to communicate mathematical ideas and to solve problems. (*See Appendix for grade-level specifics.*)

Related WILD Activities

- Bearly Growing
- Birds of Prey
- Graphanimal
- Oh Deer!
- Turkey Trouble
- World Travelers

Related WILD Aquatic Activities

- Eat and Glow
- Plastic Jellyfish
- What's In The Water?
- Where Have All The Salmon Gone?

M:CCR:3 – Students will recognize, explore, and develop mathematical connections. (*See Appendix for grade-level specifics.*)

Related WILD Activities

- Birds of Prey
- Checks and Balances
- Dropping in on Deer
- How Many Bears Can Live in This Forest?
- I'm Thirsty
- No Water Off a Duck's Back
- Oh Deer!
- Turkey Trouble

Related WILD Aquatic Activities

- Watershed
- Where Does Water Run?

**Charts Correlating
Project WILD and
Project WILD Aquatic
with
New Hampshire's Framework
for Mathematics (K-12)**

NH Curriculum Framework for Mathematics

Number and Operations

M:N&O:1 – Demonstrates understanding of rational numbers.

M:N&O:2 – Demonstrates understanding of the relative magnitude of numbers.

M:N&O:3 – Demonstrates understanding of mathematical operations.

M:N&O:4 – Accurately solves problems.

M:N&O:5 – Demonstrates understanding of monetary value.

M:N&O:6 – Uses a variety of mental computation strategies to solve problems and determine the reasonableness of answers.

M:N&O:7 – Makes estimates.

M:N&O:8 – Applies properties of numbers and field properties to solve problems and simplify computations.

Geometry and Measurement

M:G&M:1 – Uses properties or attributes to identify, describe, classify, or distinguish among polygons and circles.

M:G&M:2 – Applies theorems or relationships to solve problems.

M:G&M:3 – Uses properties or attributes to identify, compare, or describe three-dimensional shapes.

M:G&M:4 – Demonstrates understanding and applies concepts of congruency.

M:G&M:5 – Demonstrates understanding and applies concepts of similarity.

M:G&M:6 – Demonstrates understanding of one, two, and three-dimensional measurements, including length/height, radius, diameter, circumference, perimeter, area, surface area, volume, and the use of trigonometric formulas to find these measures.

M:G&M:7 – Demonstrates understanding of measurable attributes, measures and uses units of measure appropriately and consistently, and makes accurate conversions when solving problems.

M:G&M:8 – Determines elapsed and accrued time.

M:G&M:9 – Demonstrates understanding of spatial relationships and solves problems using location and position.

M:G&M:10 – Demonstrates conceptual understanding of spatial reasoning and visualization.

Functions and Algebra

M:F&A:1 – Identifies, generalizes, and extends to specific cases a variety of patterns and/or sequences.

M:F&A:2 – Demonstrates understanding of linear and nonlinear relationships and functions.

M:F&A:3 – Demonstrates understanding of algebraic expressions.

M:F&A:4 – Demonstrates conceptual understanding of equality.

Data, Statistics, and Probability

M:DSP:1 – Interprets a given representation to answer questions related to the data, or to analyze the data to formulate conclusions, make predictions, and/or solve problems.

M:DSP:2 – Analyzes patterns, trends, or distributions in data in a variety of contexts.

M:DSP:3 – Organizes and displays data; identifies or describes elements of representations that best display a given set of data or situation.

M:DSP:4 – Uses counting techniques to solve problems.

M:DSP:5 – Solves problems to determine the experimental or theoretical probability of an event.

M:DSP:6 – Decides the most effective method to collect the data necessary to answer a question or hypothesis; collects, organizes and appropriately displays the data; analyzes the data to draw conclusions, and when appropriate makes predictions, asks new questions, and makes connections to real-world situations.

Problem Solving, Reasoning, and Proof

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

Grades K-2:

- Formulate and solve multi-step problems from everyday and mathematical situations.
- Solve problems using a variety of strategies.
- Verify and interpret results with respect to the original problem.
- Determine if the solution to a problem is reasonable.
- Solve problems using manipulatives, graphs, charts, diagrams, and calculators.
- Demonstrate that a problem may be solved in more than one way.
- Exhibit confidence in their ability to solve problems independently and in groups.
- Display increasing perseverance and persistence in problem solving.

Grades 3-5:

- Determine the reasonableness of solutions to real-world problems.
- Generalize solutions and apply strategies to new problem situations.
- Add to the repertoire of problem-solving strategies, and use those strategies in more sophisticated ways.
- Solve problems with multiple solutions, recognize when a problem has no solution, and recognize problems where more information is needed.
- Translate results of a computation into results that fit the real-world problem.

Grades 6-8:

- 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 situations and the problem-solving process for a given situation and refine strategies as needed.

High School:

- Expand the repertoire of problem-solving strategies and use those strategies in more sophisticated ways.
- Use technology whenever appropriate to solve real-world problems.

- Formulate and redefine problem situations as needed to arrive at appropriate conclusions.

M:PRP:2 – Students will use mathematical reasoning and proof and be able to:

Grades K-2:

- Use models, known facts, properties, and relationships to explain their thinking.
- Justify solution processes and answers.
- Draw conclusions using inductive reasoning.
- Identify the missing information needed to find a solution to a given story problem.
- Use patterns and relationships to analyze mathematical situations.

Grades 3-5:

- Draw conclusions and solve problems using elementary deductive reasoning and reasoning by analogy.
- Make and defend conjectures and generalizations.
- Use models, known facts, properties, and relationships to explain thinking and to justify answers and solution processes.
- Recognize the pervasive use and power of reasoning as a part of mathematics.

Grades 6-8:

- Draw logical conclusions and make generalizations using deductive and inductive reasoning.
- Formulate, test, and justify mathematical conjectures and arguments.
- Construct and determine the validity of a mathematical argument or a solution.
- Apply mathematical reasoning skills in other disciplines.

High School:

- Expand the repertoire of proof techniques and use those techniques in more sophisticated ways.
- Use formal and informal reasoning and proof to explain and justify conclusions.
- Formalize mathematical arguments through the use of deductive reasoning.
- Use the principal of mathematical induction.
- Use reasoning and proof throughout classroom discussions independent of the mathematical topic being studied.
- Recognize how reasoning and proof influence the structure of mathematics

Communication, Connections, and Representations

M:CCR:1 – Students will communicate their understanding of mathematics and be able to:

Grades K-2:

- Demonstrate mathematical communication through discussion, reading, writing, listening, and responding, individually and in groups.
- Discuss relationships between everyday language and mathematical language symbols.
- Explain conclusions, thought processes, and strategies in problem-solving situations.
- Discuss, illustrate, and write about mathematical concepts and relationships.
- Draw pictures and use objects to illustrate mathematical concepts.

Grades 3-5:

- Discuss mathematical ideas and write convincing arguments.
- Understand, explain, analyze, and evaluate mathematical arguments and conclusions presented by others.
- Ask clarifying and extending questions related to mathematics they have heard or read about.
- Understand and appreciate the economy and power of mathematical symbolism and its role in the development of mathematics.
- Demonstrate an understanding of mathematical concepts and relationships through a variety of methods.
- Use a variety of technologies to represent and communicate mathematical ideas.

Grades 6-8

- Articulate ideas clearly and logically in both written and oral form.
- Present, share, explain, and justify thinking with others and build upon the ideas of others to solve problems.
- Use mathematical symbols and notation.
- Formulate questions, conjectures, definitions, and generalizations about data, information, and problem situations.

High School:

- Explain and justify their thinking and develop increasingly sophisticated questions for given problem-situations.
- Critique and follow the logic of arguments presented within mathematics and across disciplines.

M:CCR:2 – Students will create and use representations to communicate mathematical ideas and to solve problems and be able to:

Grades K-2:

- Create and use age level appropriate representations to organize, record, and communicate mathematical ideas.
- Select, apply, and translate among mathematical representations to solve problems.
- Link different representations.
- Use representations to model and interpret physical, social, and mathematical phenomena.
- Use conventional and self-generated representations and connect them.
- Realize that any representation is subject to multiple interpretations.

Grades 3-5:

- Use physical models and diagrams to represent important mathematical ideas.
- Use appropriate representations to solve problems or to portray, clarify, or extend a mathematical idea.
- Recognize equivalent representations of concepts and procedures and translate among them as appropriate.

Grades 6-8:

- Use models and technology to develop equivalent representations of the same mathematical concept.
- Use and create representations to solve problems and organize their thoughts and ideas.
- Convert between representations.

High School:

- Choose appropriate representations and mathematical language to present ideas clearly and logically for a given situation.
- See a common structure in mathematical phenomena that come from very different contexts.
- Find representations that model essential features of a mathematical situation.
- Use representations as a primary means for expressing and understanding more abstract mathematical concepts.

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

Grades K-2:

- Link conceptual and procedural knowledge.
- Recognize and use mathematics in other curriculum areas.
- Recognize and use mathematics in their daily lives.
- Identify mathematical situations occurring in literature for children.
- Identify examples of geometry in nature, art, and architecture.

Grades 3-5:

- See mathematics as an integrated whole.
- Recognize relationships among different topics in mathematics.
- Recognize and use mathematics in other curriculum areas and in their daily lives.
- Link concepts and procedures.
- Use mathematical skills, concepts, and applications in other disciplines.

Grades 6-8:

- 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.

High School:

- Explain in oral or written form how mathematics connects to other disciplines, to daily life, careers, and society.
- Explain multiple approaches that lead to equivalent results when solving problems.