

Math Strands and Standards

Strands	Standards <i>Learners will demonstrate the ability to...</i>
Number Sense	N-1 Represent and use numbers in a variety of equivalent forms in contextual situations N-2 Understand meanings of operations and how they relate to one another N-3 Compute fluently and make reasonable estimates
Patterns, Functions and Algebra	P-1 Explore, identify, analyze, and extend patterns in mathematical and adult contextual situations P-2 Articulate and represent number and data relationships using words, tables, graphs, rules, and equations P-3 Recognize and use algebraic symbols to model mathematical and contextual situations P-4 Analyze change in various contexts
Statistics and Probability	S-1 Collect, organize, and represent data S-2 Read and interpret data representations S-3 Describe data using numerical descriptions, statistics, and trend terminology S-4 Make and evaluate arguments and statements by applying knowledge of data analysis, bias factors, graph distortions, and context S-5 Know and apply basic probability concepts
Geometry and Measurement	G-1 Use and apply geometric properties and relationships to describe the physical world and identify and analyze the characteristics of geometric figures G-2 Use transformations and symmetry to analyze mathematical situations G-3 Specify locations and describe spatial relationships using coordinate geometry and other representational systems G-4 Understand measurable attributes of objects and the units, systems, and processes of measurement and apply appropriate techniques, tools, and formulas to determine measurements

Science Strands and Standards

STRAND	LEARNING STANDARDS		TOPICS
	Learners will develop an understanding of...	Learners will be able to...	
Doing Science & Technology	<ul style="list-style-type: none"> Science as a process of inquiry Technology as a process of problem solving The usefulness of scientific method or systematic inquiry 	<ul style="list-style-type: none"> Tinker with objects and ideas Make observations Ask questions Form hypotheses or make predictions Plan and conduct simple investigations Analyze observations, data, and other resources Communicate about observations & conclusions Identify unresolved questions 	<ul style="list-style-type: none"> Why are there seasons? Why does water form beads on the outside of a cold glass? How does a motor work? What is a cloud made of? Where do plants get their food?
Unifying Concepts in Science & Technology	Similarity and Diversity		
	<ul style="list-style-type: none"> How everything is made up of a small number of building blocks The value and importance of diversity in all parts of the universe The interdependence needed for balance in all parts of our universe 	<ul style="list-style-type: none"> Create connections between building blocks and complexity in our natural and designed world Recognize and communicate the value and importance of diversity to our survival and predict the consequences of losing diversity in various environments Examine and explain examples of interdependence in our natural and designed world 	<ul style="list-style-type: none"> Elements Food chains Characteristics and habitats of animals Pollution Resource management Genetic engineering
	Order and Organization		
	<ul style="list-style-type: none"> Why scientists order and organize phenomena in both our natural and designed world How order and organization are based on similarities and differences How creating and using order and organization tools help solve life problems 	<ul style="list-style-type: none"> Order and organize objects and events using similarities and differences and explain your reasoning for doing so Recognize and communicate specific examples of how order and organization is used by scientists and in daily life Use order and organization as tools in problem solving 	<ul style="list-style-type: none"> Make prediction from the order of the Periodic table; Plan and plant a garden; Contrast and compare: viruses/bacteria, plants/animals, fruits/vegetable, birds/mammals

Science Strands and Standards (cont.)

Systems

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| <ul style="list-style-type: none"> • What a system is • How systems operate and function, including their dynamic nature • the inter-dependence within, between, and among systems | <ul style="list-style-type: none"> ▪ Recognize and describe a system and its main components ▪ Observe and document system input and output over time ▪ Communicate how different systems relate to and interact with each other | <ul style="list-style-type: none"> o Body systems: circulatory, skeletal, immune, etc o Water cycle o Ecosystems o Sewer systems o Heating system o Weather systems o Aquarium or terrarium |
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Measurement, Magnitude, and Models

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| <ul style="list-style-type: none"> • The central role of measurement in scientific investigation and technological design • The immense differences in order of magnitude encountered in our universe • How models assist or hinder us in problem solving | <ul style="list-style-type: none"> ▪ Identify and use appropriate measuring tools in scientific investigations and technological design problems ▪ Compare and contrast magnitudes in the natural world and recognize when phenomena can not be directly observed with our senses. Identify tools that make such observations possible ▪ Use appropriate models (e.g. diagrams, analogies, scaled 3-D models, etc.) to solve every day problems | <ul style="list-style-type: none"> o <i>“Kitchen” experiments</i> o <i>Health issues</i> o <i>Solar system</i> o <i>Atoms and molecules</i> o <i>Speed of light</i> o <i>Energy as waves.</i> |
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Science Strands and Standards (cont.)

	<p>Patterns of Change</p> <ul style="list-style-type: none"> • The importance of recognizing patterns of change and how that helps us understand our world • How to identify and measure change and patterns in change • The importance of patterns of change in evolution, equilibrium, and conservation 	<ul style="list-style-type: none"> ▪ Recognize and measure change in a system over time ▪ Identify the factors that cause changes and predict what might happen if a particular change is introduced into a system ▪ Identify patterns from observations of change over time 	<ul style="list-style-type: none"> o <i>Weather & climate</i> o <i>Aging, exercise</i> o <i>Erosion</i> o <i>Form and function in evolution of a species</i> o <i>Evaporation and condensation</i> o <i>Law of conservation of mass and energy</i>
	<p>Predictability</p> <ul style="list-style-type: none"> • What it means for a something to be predictable and what the relationship is between cause and effect • Why predictability is important in understanding our world • What kinds of things science can explain and predict, and what kinds of things it cannot 	<ul style="list-style-type: none"> ▪ Identify cause and effect relationships and explain your reasoning based on factual information ▪ Use knowledge of cause & effect to make predictions, understand and explain phenomena in our physical world ▪ Differentiate between what science can and cannot explain and predict 	<ul style="list-style-type: none"> o <i>Natural hazards</i> o <i>Light & Electricity</i> o <i>Force and motion</i> o <i>Gravity</i> o <i>Planetary motion</i>
<p>Using Science & Technology</p>	<ul style="list-style-type: none"> • <i>The important role science and technology play in history as well as in their own lives as family members, community members and citizens, workers and life-long learners.</i> • <i>How scientific method and the process of inquiry can be applied to solve problems across the whole spectrum of life.</i> <p><i>The important role scientific concepts and processes play in political decision making and the formulation of laws for mutual benefit.</i></p>	<ul style="list-style-type: none"> ▪ <i>Identify, gather and process appropriate science information</i> ▪ <i>Make informed decisions or solve problems in response to household situations and in community matters involving science and technology.</i> ▪ <i>Engage in public discussions and debate about issues of social concern which involve science and technology.</i> 	<ul style="list-style-type: none"> o <i>The ozone layer and SUVs</i> o <i>Local health and environmental justice issues</i> o <i>Lead poisoning</i> o <i>Workplace safety</i> o <i>Safe drinking water</i> o <i>Energy conservation; Recycling</i> o <i>Health and household safety issue</i>