2026+ Science Summative Assessment Blueprint

2026+ WY-TOPP | Approved: September 19, 2024

Aligned to 2023 Wyoming Science Content & Performance Standards

Operational on WY-TOPP Test Beginning School Year 2025-26

WY-TOPP Grade 4, 8, 10 Science Blueprint Snapshot

% Range by Domain on the WY-TOPP Science Assessment

GRADE	PS – PHYSICAL SCIENCE	LS – LIFE SCIENCE	ESS –EARTH & SCIENCE	ETS – ENGINEERING, TECHNOLOGY, & APPLICATIONS OF SCIENCE
4	58-64%	22-28%	10-15%	Embedded within PS
8	33-38%	33-38%	28-33%	Embedded within PS, LS, & ESS
10	33-38%	33-38%	26-31%	Embedded within PS, LS, & ESS

WY-TOPP Gr. 4 Science Blueprint

Physical Science [58-64%]

4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. [3-5-ETS1-2 embedded]

4-PS4-1 Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.

4-PS4-3 Generate and compare multiple solutions that use patterns to transfer information. [3-5-ETS1-2 embedded]

Life Science [22-28%]

4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Earth and Space Science [10-15%]

4-ESS1-1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.

Engineering and Design [embedded within Physical Science domain 4-PS3-4 and 4-PS4-3]

3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

WY-TOPP Gr. 8 Science Blueprint

Physical Science [33-38%]

MS-PS1-1 Develop models to describe the atomic composition of simple molecules and extended structures.

MS-PS1-4 Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

MS-PS1-5 Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

MS-PS2-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. [MS-ETS1-1 and MS-ETS2-2 embedded]

MS-PS2-2 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.

MS-PS3-2 Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.

MS-PS3-4 Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.

MS-PS4-1 Use mathematical representations to describe a simple model for waves, which includes how the amplitude of a wave is related to the energy in a wave.

Life Science [33-38%]

MS-LS1-2 Develop and use models to describe the parts, functions, and basic processes of cells.

MS-LS1-3 Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

MS-LS1-6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS2-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

MS-LS2-5 Evaluate competing design solutions for maintaining biodiversity and ecosystem services. [MS-ETS2-2 embedded]

MS-LS3-1 Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.

MS-LS3-2 Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.

MS-LS4-1 Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.

MS-LS4-6 Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.

Earth and Space Science [28-33%]

MS-ESS1-1 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

MS-ESS1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

MS-ESS2-3 Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

MS-ESS2-6 Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

MS-ESS3-3 Apply scientific principles to design a method for monitoring, evaluating, and managing a human impact on the environment. [MS-ETS1-1 and MS-ETS2-2 embedded]

Engineering and Design [embedded within Physical Science domain MS-PS2-1, Life Science MS-LS2-5, and Earth and Space Science MS-ESS3-3]

MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS-ETS2-2 Develop a model defining and prioritizing the impacts of human activity on a particular aspect of the environment, identifying positive and negative consequences of the activity, both short and long-term, and investigate and explain how the ethics and integrity of scientists and engineers and respect for individual property rights might constrain future development.

WY-TOPP Gr. 10 Science Blueprint

Physical Science [33-38%]

HS-PS1-1 Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.

HS-PS1-2 Construct an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties, and revise, as needed.

HS-PS1-7 Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

HS-PS2-3 Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision. [HS-ETS1-3 embedded]

HS-PS2-5 Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.

HS-PS3-3 Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.

HS-PS4-1 Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media. [HS-ETS1-5 embedded]

Life Science [33-38%]

HS-LS1-1 Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.

HS-LS1-6 Construct explanations and revise, as needed, based on evidence for: 1) how carbon, hydrogen, and oxygen may combine with other elements to form amino acids and/or other large carbon-based molecules, and 2) how other hydrocarbons may also combine to form large carbon-based molecules.

HS-LS2-5 Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

HS-LS2-6 Evaluate the claims, evidence, and reasoning that the complex biotic and abiotic interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a modified ecosystem. [HS-ETS1-5 embedded]

HS-LS3-2 Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. [HS-ETS1-5 embedded]

HS-LS4-5 Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. [HS-ETS1-5 embedded]

Earth and Space Science [26-31%]

HS-ESS1-5 Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.

HS-ESS2-4 Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate. [HS-ETS1-5 embedded]

HS-ESS3-2 Evaluate competing design solutions for developing, managing, and using energy and mineral resources based on cost-benefit ratios. [HS-ETS1-3 and HS-ETS1-5 embedded]

HS-ESS3-5 Analyze data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.

Engineering and Design [embedded within Physical Science domain HS-PS2-3 and HS-PS4-1; Life Science HS-LS2-6, HS-LS3-2, and HS-LS4-5; and Earth and Space Science HS-ESS2-4 and HS-ESS3-2]

HS-ETS1-3 Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

HS-ETS1-5 Evaluate the validity and reliability of claims in a variety of materials.