

Science Grades 6-8

PBGR

The scientifically literate individual knows how to ask questions investigate everyday phenomena, and construct explanations. They describe, explain, and make predictions related to phenomena. Scientifically literate individuals engage in social and civic discourse using valid scientific evidence to express positions to inform global, national, and local decisions. They evaluate the quality of scientific information based on its source and the methods used to generate it, and revise thinking based on new information.

Critical Proficiency

Structure and Function

Demonstrate that the way an object or organism is shaped or structured determines many of its properties and functions.

Critical Proficiency

Cause and Effect

Use evidence to identify or predict cause and effect relationships for complex natural and human designed systems.

Critical Proficiency

Energy and Matter

Analyze energy and matter flows within, between, and among systems to understand the systems' behaviors.

Critical Proficiency

Systems and Systems Models

Define the boundaries and initial conditions of a system, analyze inputs and outputs, and describe and predict behavior using models.

Priority Performance Indicators

Structure and Function

Matter and Its Interactions: Structure of Matter

Develop a model to describe that matter is composed of atoms and molecules. Analyze and interpret data on the properties of substances before and after chemical changes have occurred.

MS-PS1-2; MS-PS1-1

Waves and Their Applications in Technologies for Information Transfer

Describe how the amplitude of a wave is related to the energy in a wave and develop a model to demonstrate how waves are reflected, absorbed, or transmitted through various materials.

MS-PS4-1; MS-PS4-2

From Molecules to Organisms: Structures and Processes

Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

MS-LS1-1; MS-LS1-2

Priority Performance Indicators

Cause and Effect

Earth's Place in the Universe

Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of past plate motions and how these changes are reflected in the geologic time scale.

MS-ESS2-3; MS-ESS1-4

Earth's Systems

Construct an explanation based on evidence for how geoscience processes have changed Earth's surface/spheres at varying time and spatial scales.

MS-ESS2-2

Ecosystems: Interactions, Energy, and Dynamics

Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

MS-LS2-4

Biological Evolution: Unity and Diversity

Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment and identify technologies humans use to influence the inheritance of desired traits in organisms.

MS-LS4-4; MS-LS4-5

Priority Performance Indicators

Energy and Matter

Matter and Its Interactions

Develop a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved, and provide evidence that the chemical reaction results in either the release or absorption of thermal energy.

MS-PS1-5; MS-PS1-6

Energy

Investigate and explain the relationships among energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles.

MS-PS3-4

Ecosystems: Interactions, Energy, and Dynamics

Develop a model to describe the cycling of matter and flow of energy among living and non-living parts of an ecosystem.

MS-LS2-3

Earth's Systems

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-ESS2-6

Priority Performance Indicators

Systems and Systems Models

Earth and Human Activity

Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

MS-ESS3-4

Engineering Design

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-ETS1-1

Earth and Human Activity

Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

MS-ESS3-5

Type of Science	Breakdown of PBGR by Discipline
Physical Science	7
Life Sciences	6
Earth Science	6
Engineering, Technology, and Application of Science (ETS)	1