

National Science Education Standards

Standards Key

- M - major emphasis
- m - minor emphasis
- i - indirect; i.e., not directly tied to standard, but important background information.

The letters A-G represent various areas in the National Science Education Standards, as follows:

- A - Science as Inquiry
- B - Physical Science: Motion and Forces
- C - Life Science
- D - Earth and Space Science
- E - Science and Technology
- F - Science in Personal and Social Perspectives
- G - History and Nature of Science

Activity	A	B	D	E	F	G	Emphasis
9 - The Sun Earth Connection	m	M M M	m	M	M	m M	A: Identify questions and concepts that guide scientific investigations. B: (Structure of Atoms). Matter is made of minute particles called atoms, and atoms are composed of even smaller components. These components have measurable properties, such as mass and electrical charge. Each atom has a positively charged nucleus surrounded by negatively charged electrons. B: (Forces and Motion). Electricity and magnetism are two aspects of a single electromagnetic force. Moving electric charges produce magnetic forces, and moving magnets produce electric forces. B: (Interactions of Energy and Matter). Electromagnetic waves include radio waves (the longest wavelength), microwaves, infrared radiation (radiant heat), visible light, ultraviolet radiation, x-rays, and gamma rays. D: Stars produce energy from nuclear reactions, primarily the fusion of hydrogen to form helium. E: (Understanding About Science and Technology). Science often advances with the introduction of new technologies. Solving technological problems often results in new scientific knowledge. New technologies often extend the current levels of scientific understanding and introduce new areas of research. F: (Natural and human-induced hazards). Natural and human-induced hazards present the need for humans to assess potential danger and risk. G: (Science as a Human Endeavor) Individuals and teams have contributed and will continue to contribute to the scientific enterprise. G: (Nature of Scientific Knowledge) Because all scientific ideas depend on experimental and observational confirmation, all scientific knowledge is, in principle, subject to change as new evidence becomes available.
10 - The Magnetosphere		M M m	m	M		m M	B: (Structure of Atoms). Matter is made of minute particles called atoms, and atoms are composed of even smaller components. These components have measurable properties, such as mass and electrical charge. Each atom has a positively charged nucleus surrounded by negatively charged electrons. B: (Forces and Motion). Electricity and magnetism are two aspects of a single electromagnetic force. Moving electric charges produce magnetic forces, and moving magnets produce electric forces. B: (Interactions of Energy and Matter). Each kind of atom or molecule can gain or lose energy only in particular discrete amounts and thus can absorb and emit light only at wavelengths corresponding to these amounts. These wavelengths can be used to identify the substance. D: Stars produce energy from nuclear reactions, primarily the fusion of hydrogen to form helium. E: (Understanding About Science and Technology). Science often advances with the introduction of new technologies. Solving technological problems often results in new scientific knowledge. New technologies often extend the current levels of scientific understanding and introduce new areas of research. G: (Science as a Human Endeavor) Individuals and teams have contributed and will continue to contribute to the scientific enterprise. G: (Nature of Scientific Knowledge) Because all scientific ideas depend on experimental and observational confirmation, all scientific knowledge is, in principle, subject to change as new evidence becomes available.

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Activity	A	B	D	E	F	G	Emphasis
12 - Univ. Time			i			m	G: (Science as a Human Endeavor) Individuals and teams have contributed and will continue to contribute to the scientific enterprise.
13 - The Aurora	m	M M M	i	m		m	A: Identify questions and concepts that guide scientific investigations. B: (Structure of Atoms). Matter is made of minute particles called atoms, and atoms are composed of even smaller components. These components have measurable properties, such as mass and electrical charge. Each atom has a positively charged nucleus surrounded by negatively charged electrons. B: (Forces and Motion). Electricity and magnetism are two aspects of a single electromagnetic force. Moving electric charges produce magnetic forces, and moving magnets produce electric forces. B: (Interactions of Energy and Matter). Each kind of atom or molecule can gain or lose energy only in particular discrete amounts and thus can absorb and emit light only at wavelengths corresponding to these amounts. These wavelengths can be used to identify the substance. E: (Understanding About Science and Technology). Science often advances with the introduction of new technologies. Solving technological problems often results in new scientific knowledge. New technologies often extend the current levels of scientific understanding and introduce new areas of research. G: (Historical Perspectives) In history, diverse cultures have contributed scientific knowledge and technologic inventions.
14 - Magnetic Storms	M	m	i	M		m	A: Design and conduct scientific investigation; Use technology and mathematics to improve investigations and communications. B: (Forces and Motion). Electricity and magnetism are two aspects of a single electromagnetic force. Moving electric charges produce magnetic forces, and moving magnets produce electric forces. E: (Understanding About Science and Technology). Science often advances with the introduction of new technologies. Solving technological problems often results in new scientific knowledge. New technologies often extend the current levels of scientific understanding and introduce new areas of research. G: (Nature of Scientific Knowledge) Because all scientific ideas depend on experimental and observational confirmation, all scientific knowledge is, in principle, subject to change as new evidence becomes available.

National Math Standards

NM-NUM.9-12.3: (Numbers and Operations). Compute fluently and make reasonable estimates.

NM-ALG.9-12.3: (Algebra). Use mathematical models to represent and understand quantitative relationships.

NM-GEO.9-12.2: (Geometry). Specify locations and describe spatial relationships using coordinate geometry and other representational systems.

NM-GEO.9-12.4: (Geometry). Use visualization, spatial reasoning, and geometric modeling to solve problems.

NM-MEA.9-12.1: (Measurement). Understand measurable attributes of objects and the units, systems, and processes of measurement.

NM-MEA.9-12.2: (Measurement). Apply appropriate techniques, tools, and formulas to determine measurements.

NM-DATA.9-12.1 (Data Analysis & Probability). Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer.

NM-DATA.9-12.2 (Data Analysis & Probability). Select and use appropriate statistical methods to analyze data.

NM-DATA.9-12.3: (Data Analysis & Probability). Develop and evaluate inferences and predictions that are based on data.

NM-DATA.9-12.4: (Data Analysis & Probability). Understand and apply basic concepts of probability

NM-PROB.CONN. PK-12.3: (Connections - Grades Pre-K - 12). Recognize and apply mathematics in contexts outside of mathematics.

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Activity	NM- NUM. 9-12.3	NM- ALG. 9-12.3	NM- GEO. 9-12.2	NM- GEO. 9-12.4	NM- MEA. 9-12.1	NM- MEA. 9-12.2	NM- DATA. 9-12.1	NM- DATA. 9-12.2	NM- DATA. 9-12.3	NM- DATA. 9-12.4	NM- PROB. CONN. PK-12.3
11 - Time Zone Math	m	m				M					m
12 - Universal Time	m	m				M					m
13 - The Aurora	m	m	M	M		M					m
14 - Magnetic Storms	m				M		M	m	M	M	m