**Comprehensive Science 3 Advanced (8th Grade Adv.) NGSSS**

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| **Benchmark** | **Subject** | **Big Idea** | **Standard** |
| SC.8.N.1.1 | Nature of Science | The Practice of Science | Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. |
| SC.8.N.1.2 | Nature of Science | The Practice of Science | Design and conduct a study using repeated trials and replication. |
| SC.8.N.1.3 | Nature of Science | The Practice of Science | Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim. |
| SC.8.N.1.4 | Nature of Science | The Practice of Science | Explain how hypotheses are valuable if they lead to further investigations, even if they turn out not to be supported by the data. |
| SC.8.N.1.5 | Nature of Science | The Practice of Science | Analyze the methods used to develop a scientific explanation as seen in different fields of science. |
| SC.8.N.1.6 | Nature of Science | The Practice of Science | Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence. |
| SC.8.N.2.1 | Nature of Science | The Characteristics of Scientific Knowledge | Distinguish between scientific and pseudoscientific ideas. |
| SC.8.N.2.2 | Nature of Science | The Characteristics of Scientific Knowledge | Discuss what characterizes science and its methods. |
| SC.8.N.3.1 | Nature of Science | The Role of Theories, Laws, Hypotheses, and Models | Select models useful in relating the results of their own investigations. |
| SC.8.N.3.2 | Nature of Science | The Role of Theories, Laws, Hypotheses, and Models | Explain why theories may be modified but are rarely discarded. |
| SC.8.N.4.1 | Nature of Science | Science and Society | Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels. |
| SC.8.N.4.2 | Nature of Science | Science and Society | Explain how political, social, and economic concerns can affect science, and vice versa. |

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| **Benchmark** | **Subject** | | **Big Idea** | | **Standard** |
| SC.8.E.5.1 | Earth/Space Science | | Earth in Space and Time | | Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance. |
| SC.8.E.5.2 | Earth/Space Science | | Earth in Space and Time | | Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars. |
| SC.8.E.5.3 | Earth/Space Science | | Earth in Space and Time | | Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition. |
| SC.8.E.5.4 | Earth/Space Science | | Earth in Space and Time | | Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions. |
| SC.8.E.5.5 | Earth/Space Science | | Earth in Space and Time | | Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness). |
| SC.8.E.5.6 | Earth/Space Science | | Earth in Space and Time | | Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences. |
| SC.8.E.5.7 | Earth/Space Science | | Earth in Space and Time | | Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions. |
| SC.8.E.5.8 | Earth/Space Science | | Earth in Space and Time | | Compare various historical models of the Solar System, including geocentric and heliocentric. |
| SC.8.E.5.9 | Earth/Space Science | | Earth in Space and Time | | Explain the impact of objects in space on each other including:   1. The Sun on the Earth including seasons and gravitational attraction 2. The Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body. |
| SC.8.E.5.10 | Earth/Space Science | | Earth in Space and Time | | Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information. |
| SC.8.E.5.11 | Earth/Space Science | | Earth in Space and Time | | Identify and compare characteristics of the electromagnetic spectrum such as wavelength, frequency, use, and hazards and recognize its application to an understanding of planetary images and satellite photographs. |
| SC.8.E.5.12 | Earth/Space Science | | Earth in Space and Time | | Summarize the effects of space exploration on the economy and culture of Florida. |
| SC.912.E.5.4\*  High School Standard | | Earth and Space Science | | Earth in Space and Time | Explain the physical properties of the Sun and its dynamic nature and connect them to conditions and events on Earth. |

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| **Benchmark** | **Subject** | **Big Idea** | **Standard** |
| SC.8.P.8.1 | Physical Science | Properties of Matter | Explore the scientific theory of atoms (also known as atomic theory) by using models to explain the motion of particles in solids, liquids, and gases. |
| SC.912.P.8.1\*  High School Standard | Physical Science | Properties of Matter | Differentiate among the four states of matter. |
| SC.8.P.8.2 | Physical Science | Properties of Matter | Differentiate between weight and mass recognizing that weight is the amount of gravitational pull on an object and is distinct from, though proportional to, mass. |
| SC.8.P.8.3 | Physical Science | Properties of Matter | Explore and describe the densities of various materials through measurement of their masses and volumes. |
| SC.8.P.8.4 | Physical Science | Properties of Matter | Classify and compare substances on the basis of characteristic physical properties that can be demonstrated or measured; for example, density, thermal or electrical conductivity, solubility, magnetic properties, melting and boiling points, and know that these properties are independent of the amount of the sample. |
| SC.8.P.8.5 | Physical Science | Properties of Matter | Recognize that there are a finite number of elements and that their atoms combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter. |
| SC.912.P.8.7\*  High School Standard | Physical Science | Properties of Matter | Interpret formula representations of molecules and compounds in terms of composition and structure. |
| SC.8.P.8.6 | Physical Science | Properties of Matter | Recognize that elements are grouped in the periodic table according to similarities of their properties. |
| SC.912.P.8.5\*  High School Standard | Physical Science | Properties of Matter | Relate properties of atoms and their position in the periodic table to the arrangement of their electrons. |
| SC.8.P.8.7 | Physical Science | Properties of Matter | Explore the scientific theory of atoms (also known as atomic theory) by recognizing that atoms are the smallest unit of an element and are composed of sub-atomic particles (electrons surrounding a nucleus containing protons and neutrons). |
| SC.912.P.8.4\*  High School Standard | Physical Science | Properties of Matter | Explore the scientific theory of atoms (also known as atomic theory) by describing the structure of atoms in terms of protons, neutrons and electrons, and differentiate among these particles in terms of their mass, electrical charges and locations within the atom. |
| SC.8.P.8.8 | Physical Science | Properties of Matter | Identify basic examples of and compare and classify the properties of compounds, including acids, bases and salts. |
| SC.912.P.8.11\*  High School Standard | Physical Science | Properties of Matter | Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH. |
| SC.8.P.8.9 | Physical Science | Properties of Matter | Distinguish among mixtures (including solutions) and pure substances. |
| SC.8.P.9.1 | Physical Science | Changes in Matter | Explore the law of conservation of mass by demonstrating and concluding that mass is conserved when substances undergo physical and chemical changes. |
| SC.8.P.9.2 | Physical Science | Changes in Matter | Differentiate between physical changes and chemical changes. |
| SC.912.P.8.2\*  High School Standard | Physical Science | Changes in Matter | Differentiate between physical and chemical properties and physical and chemical changes of matter. |
| SC.8.P.9.3 | Physical Science | Changes in Matter | Investigate and describe how temperature influences chemical changes. |
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| **Benchmark** | **Subject** | **Big Idea** | **Standard** |
| SC.8.L.18.1 | Life Science, HG&D, Clean Energy | Matter and Energy Transformations | Describe and investigate the process of photosynthesis, such as roles of light, carbon dioxide, water and chlorophyll; production of food; release of oxygen. |
| SC.912.L.18.7\*  High School Standard | Life Science, HG&D, Clean Energy | Matter and Energy Transformations | Identify the reactants, products, and basic functions of photosynthesis. |
| SC.8.L.18.2 | Life Science, HG&D, Clean Energy | Matter and Energy Transformations | Describe and investigate how cellular respiration breaks down food to provide energy and releases carbon dioxide. |
| SC.912.L.18.8\*  High School Standard | Life Science, HG&D, Clean Energy | Matter and Energy Transformations | Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration. |
| SC.8.L.18.3 | Life Science, HG&D, Clean Energy | Matter and Energy Transformations | Construct a scientific model of the carbon cycle to show how matter and energy are continuously transferred within and between organisms and their physical environment. |
| SC.912.L.18.9\*  High School Standard | Life Science, HG&D, Clean Energy | Matter and Energy Transformations | Explain the interrelated nature of photosynthesis and cellular respiration. |
| SC.8.L.18.4 | Life Science, HG&D, Clean Energy | Matter and Energy Transformations | Cite evidence that living systems follow the Laws of Conservation of Mass and Energy. |