

**Grade 8  
Science Content Assessed by FCAT  
Item Formats and Assessment Schedule by Benchmark**

| <b>Benchmark Coding</b> | <b>Description of Benchmark</b>   | <b>Assessment Schedule</b> | <b>Item Format</b> |
|-------------------------|---|----------------------------|--------------------|
| SC.A.1.3.1              | The student identifies various ways in which substances differ (e.g., mass, volume, shape, density, texture, and reaction to temperature and light).  | <b>AA</b>                  | MC,GR,SR           |
| SC.A.1.3.2              | The student understands the difference between weight and mass.<br><b>(Assessed by A.1.3.1)</b>   | <b>AA</b>                  | MC,GR,SR           |
| SC.A.1.3.3              | The student knows that temperature measures the average energy of motion of the particles that make up the substance.   | CS                         | MC                 |
| SC.A.1.3.4              | The student knows that atoms in solids are close together and do not move around easily; in liquids, atoms tend to move farther apart; in gas, atoms are quite far apart and move around freely.                      | CS                         | MC                 |
| SC.A.1.3.5              | The student knows the difference between a physical change in a substance (i.e., altering the shape, form, volume, or density) and a chemical change (i.e., producing new substances with different characteristics). | CS                         | MC                 |
| SC.A.1.3.6              | The student knows that equal volumes of different substances may have different masses.<br><b>(Assessed as A.1.3.1)</b>   | <b>AA</b>                  | MC,GR,SR           |
| SC.A.2.3.1              | The student describes and compares the properties of particles and waves.   | CS                         | MC                 |
| SC.A.2.3.2              | The student knows the general properties of the atom (a massive nucleus of neutral neutrons and positive protons surrounded by a cloud of negative electrons) and accepts that single atoms are not visible.          | CS                         | MC                 |

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| SC.A.2.3.3       | The student knows that radiation, light, and heat are forms of energy used to cook food, treat diseases, and provide energy.<br><b>(Assessed as B.1.3.1)</b>  | <b>AA</b>           | MC, GR, SR,<br>ER |
| SC.B.1.3.1       | The student identifies forms of energy and explains that they can be measured and compared.<br><b>(Also assesses A.2.3.3, B.1.3.3)</b>  | <b>AA</b>           | MC, GR, SR,<br>ER |
| SC.B.1.3.2       | The student knows that energy cannot be created or destroyed, but only changed from one form to another.  | CS                  | MC                |
| SC.B.1.3.3       | The student knows the various forms in which energy comes to Earth from the sun (e.g., visible light, infrared, and microwave).<br><b>(Assessed as B.1.3.1)</b>   | <b>AA</b>           | MC, GR, SR,<br>ER |
| SC.B.1.3.4       | The student knows that energy conversions are never 100% efficient (i.e., some energy is transformed to heat and is unavailable for further useful work).   | CS                  | MC, GR            |
| SC.B.1.3.5       | The student knows the processes by which thermal energy tends to flow from a system of higher temperature to a system of lower temperature.   | CS                  | MC, SR            |
| SC.B.1.3.6       | The student knows the properties of waves (e.g., frequency, wavelength, and amplitude); that each wave consists of a number of crests and troughs; and the effects of different media on waves.<br><b>(Also assesses C.1.3.2)</b> | <b>AA</b>           | MC, GR, SR        |

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| SC.B.2.3.1       | The student knows that most events in the universe (e.g., weather changes, moving cars, and the transfer of a nervous impulse in the human body) involve some form of energy transfer and that these changes almost always increase the total disorder of the system and its surroundings, reducing the amount of useful energy. | AA                  | MC          |
| SC.B.2.3.2       | The student knows that most of the energy used today is derived from burning stored energy collected by organisms millions of years ago (i.e., nonrenewable fossil fuels).<br><b>(Assessed as G.2.3.1)</b>   | CS                  | MC          |
| SC.C.1.3.1       | The student knows that the motion of an object can be described by its position, direction of motion, and speed.   | CS                  | MC, GR      |
| SC.C.1.3.2       | The student knows that vibrations in materials set up wave disturbances that spread away from the source (e.g., sound and earthquake waves).<br><b>(Assessed as B.1.3.6)</b>   | AA                  | MC, GR, SR  |
| SC.C.2.3.1       | The student knows that many forces (e.g., gravitational, electrical, and magnetic) act at a distance (i.e., without contact).  | CS                  | MC          |
| SC.C.2.3.2       | The student knows common contact forces.<br><b>(Assessed as C.2.3.6)</b>   | AA                  | MC, GR, SR  |
| SC.C.2.3.3       | The student knows that if more than one force acts on an object, then the forces can reinforce or cancel each other, depending on their direction and magnitude.<br><b>(Assessed as C.2.3.6)</b>   | AA                  | MC, GR, SR  |

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| SC.C.2.3.4              | The student knows that simple machines can be used to change the direction or size of a force.  | CS                         | MC, GR             |
| SC.C.2.3.5              | The student understands that an object in motion will continue at a constant speed and in a straight line until acted upon by a force and that an object at rest will remain at rest until acted upon by a force.<br><b>(Assessed as C.2.3.6)</b>   | <b>AA</b>                  | MC, GR, SR         |
| SC.C.2.3.6              | The student explains and shows the ways in which a net force (i.e., the sum of all acting forces) can act on an object (e.g., speeding up an object traveling in the same direction as the net force, slowing down an object traveling in the direction opposite of the net force).<br><b>(Also assesses C.2.3.2, C.2.3.3, C.2.3.5)</b> | <b>AA</b>                  | MC, GR, SR         |
| SC.C.2.3.7              | The student knows that gravity is a universal force that every mass exerts on every other mass.   | CS                         | MC                 |
| SC.D.1.3.1              | The student knows that mechanical and chemical activities shape and reshape the Earth's land surface by eroding rock and soil in some areas and depositing them in other areas, sometimes in seasonal layers.   | CS                         | MC                 |
| SC.D.1.3.2              | The student knows that over the whole Earth, organisms are growing, dying, and decaying as new organisms are produced by the old ones.<br><b>(Assessed as D.1.3.4)</b>  | <b>AA</b>                  | MC                 |

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| SC.D.1.3.3       | The student knows how conditions that exist in one system influence the conditions that exist in other systems.  | CS                  | MC          |
| SC.D.1.3.4       | The student knows the ways in which plants and animals reshape the landscape (e.g., bacteria, fungi, worms, rodents, and other organisms add organic matter to the soil, increasing soil fertility, encouraging plant growth, and strengthening resistance to erosion).<br><b>(Also assesses D.1.3.2)</b>                                | AA                  | MC          |
| SC.D.1.3.5       | The student understands concepts of time and size relating to the interaction of Earth's processes (e.g., lightning striking in a split second as opposed to the shifting of the Earth's plates altering the landscape, distance between atoms measured in Angstrom units as opposed to distance between stars measured in light years). | CS                  | MC, GR      |
| SC.D.2.3.1       | The student understands that quality of life is relevant to personal experience.<br><b>(NOT ASSESSED)</b>  |                     |             |
| SC.D.2.3.2       | The student knows the positive and negative consequences of human action on the Earth's systems.<br><b>(Assessed as G.2.3.4)</b>   | AA                  | SR          |
| SC.E.1.3.1       | The student understands the vast size of our Solar System and the relationship of the planets and their satellites.<br><b>(Also assesses E.1.3.2)</b>  | AA                  | MC, GR, SR  |

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| SC.E.1.3.2              | The student knows that available data from various satellite probes show the similarities and differences among planets and their moons in the Solar System.<br><b>(Assessed as E.1.3.1)</b> | <b>AA</b>                  | MC, GR, SR         |
| SC.E.1.3.3              | The student understands that our sun is one of many stars in our galaxy.<br><b>(Assessed as E.2.3.1)</b>   | CS                         | MC                 |
| SC.E.1.3.4              | The student knows that stars appear to be made of similar chemical elements, although they differ in age, size, temperature, and distance.   | CS                         | MC                 |
| SC.E.2.3.1              | The student knows that thousands of other galaxies appear to have the same elements, forces, and forms of energy found in our Solar System.<br><b>(Also assesses E.1.3.3)</b>                | CS                         | MC                 |
| SC.F.1.3.1              | The student understands that living things are composed of major systems that function in reproduction, growth, maintenance, and regulation.   | <b>AA</b>                  | MC, SR             |
| SC.F.1.3.2              | The student knows that the structural basis of most organisms is the cell and most organisms are single cells, while some, including humans, are multicellular.                              | CS                         | MC                 |
| SC.F.1.3.3              | The student knows that in multicellular organisms, cells grow and divide to make more cells in order to form and repair various organs and tissues.  | CS                         | MC                 |

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| SC.F.1.3.4              | The student knows that the levels of structural organization for function in living things include cells, tissues, organs, systems, and organisms.           | CS                         | MC                 |
| SC.F.1.3.5              | The student explains how the life functions of organisms are related to what occurs within the cell.   | CS                         | MC                 |
| SC.F.1.3.6              | The student knows that the cells with similar functions have similar structures, whereas those with different structures have different functions.           | CS                         | MC                 |
| SC.F.1.3.7              | The student knows that behavior is a response to the environment and influences growth, development, maintenance, and reproduction.                          | CS                         | MC                 |
| SC.F.2.3.1              | The student knows the patterns and advantages of sexual and asexual reproduction in plants and animals.  | CS                         | MC                 |
| SC.F.2.3.2              | The student knows that the variation in each species is due to the exchange and interaction of genetic information as it is passed from parent to offspring. | <b>AA</b>                  | MC, SR             |
| SC.F.2.3.3              | The student knows that generally organisms in a population live long enough to reproduce because they have survival characteristics.                         | CS                         | MC                 |
| SC.F.2.3.4              | The student knows that the fossil record provides evidence that changes in the kinds of plants and animals in the environment have been occurring over time. | CS                         | MC                 |
| SC.G.1.3.1              | The student knows that viruses depend on other living things.<br><b>(Assessed as G.1.3.4)</b>  | <b>AA</b>                  | MC, SR             |

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| SC.G.1.3.2              | The student knows that biological adaptations include changes in structures, behaviors, or physiology that enhance reproductive success in a particular environment.  | CS                         | MC                 |
| SC.G.1.3.3              | The student understands that the classification of living things is based on a given set of criteria and is a tool for understanding biodiversity and interrelationships.   | CS                         | MC                 |
| SC.G.1.3.4              | The student knows that the interactions of organisms with each other and with the nonliving parts of their environments result in the flow of energy and the cycling of matter throughout the system.<br><b>(Also assesses G.1.3.1, G.1.3.5)</b>                            | <b>AA</b>                  | MC, SR             |
| SC.G.1.3.5              | The student knows that life is maintained by a continuous input of energy from the sun and by the recycling of the atoms that make up the molecules of living organisms.<br><b>(Assessed as G.1.3.4)</b>  | <b>AA</b>                  | MC, SR             |
| SC.G.2.3.1              | The student knows that some resources are renewable and others are nonrenewable.<br><b>(Also assesses B.2.3.2)</b>  | CS                         | MC                 |
| SC.G.2.3.2              | The student knows that all biotic and abiotic factors are interrelated and that if one factor is changed or removed, it impacts the availability of other resources within the system.  | CS                         | MC, GR             |
| SC.G.2.3.3              | The student knows that a brief change in the limited resources of an ecosystem may alter the size of a population or the average size of individual organisms and that long-term change may result in the elimination of animal and plant populations inhabiting the Earth. | CS                         | MC, GR             |

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| SC.G.2.3.4              | The student understands that humans are a part of an ecosystem and their activities may deliberately or inadvertently alter the equilibrium in ecosystems.<br><b>(Also assesses D.2.3.2)</b>              | <b>AA</b>                  | MC, SR             |
| SC.H.1.3.1              | The student knows that scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way.           | <b>AA</b>                  | MC, SR             |
| SC.H.1.3.2              | The student knows that the study of the events that led scientists to discoveries can provide information about the inquiry process and its effects.  | CS                         | MC                 |
| SC.H.1.3.3              | The student knows that science disciplines differ from one another in topic, techniques, and outcomes, but that they share a common purpose, philosophy, and enterprise.                                  | CS                         | MC                 |
| SC.H.1.3.4              | The student knows that accurate record keeping, openness, and replication are essential to maintaining an investigator's credibility with other scientists and society.<br><b>(Also assesses H.1.3.7)</b> | <b>AA</b>                  | MC, SR, ER         |
| SC.H.1.3.5              | The student knows that a change in one or more variables may alter the outcome of an investigation.   | <b>AA</b>                  | MC, GR, SR         |
| SC.H.1.3.6              | The student recognizes the scientific contributions that are made by individuals of diverse backgrounds, interests, talents, and motivations.<br><b>(NOT ASSESSED)</b>                                    |                            |                    |

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| SC.H.1.3.7              | The student knows that when similar investigations give different results, the scientific challenge is to verify whether the differences are significant by further study.<br><b>(Assessed as H.1.3.4)</b>              | <b>AA</b>                  | MC, SR, ER         |
| SC.H.2.3.1              | The student recognizes that patterns exist within and across systems.   | CS                         | MC                 |
| SC.H.3.3.1              | The student knows that science ethics demand that scientists must not knowingly subject coworkers, students, the neighborhood, or the community to health or property risks.<br><b>(Also assesses H.3.3.2, H.3.3.3)</b> | CS                         | MC                 |
| SC.H.3.3.2              | The student knows that special care must be taken in using animals in scientific research.<br><b>(Assessed as H.3.3.1)</b>  | CS                         | MC                 |