Science, Grade 6

Subject: Science
Grade: 06
Expectations: 49
Breakouts: 226

(a) Introduction.

1. In Grades 6 through 8 Science, content is organized into recurring strands. The concepts within each grade level build on prior knowledge, prepare students for the next grade level, and establish a foundation for high school courses. In Grade 6, the following concepts will be addressed in each strand.

    A. Scientific and engineering practices. Scientific inquiry is the planned and deliberate investigation of the natural world using scientific and engineering practices. Scientific methods of investigation are descriptive, correlative, comparative, or experimental. The method chosen should be appropriate to the grade level and question being asked. Student learning for different types of investigations includes descriptive investigations, which have no hypothesis that tentatively answers the research question and involve collecting data and recording observations without making comparisons; correlative and comparative investigations, which have a hypothesis that predicts a relationship and involve collecting data, measuring variables relevant to the hypothesis that are manipulated, and comparing results; and experimental investigations, which involve processes similar to comparative investigations but in which a hypothesis can be tested by comparing a treatment with a control.

        i. Scientific practices. Students ask questions, plan and conduct investigations to answer questions, and explain phenomena using appropriate tools and models.

        ii. Engineering practices. Students identify problems and design solutions using appropriate tools and models.

    B. Matter and energy. Students build upon their knowledge of properties of solids, liquids, and gases and further explore their molecular energies. In Grade 6, students learn how elements are classified as metals, nonmetals, or metalloids based on their properties on the Periodic Table. Students have previous experience with mixtures in Grade 5. Grade 6 furthers their understanding by investigating the different types of mixtures. Subsequent grades will learn about compounds. In Grade 6, students compare the density of substances relative to fluids and identify evidence of chemical changes.

    C. Force, motion, and energy. Students investigate the relationship between force and motion using a variety of means, including calculations and measurements through the study of Newton's Third Law of Motion. Subsequent grades will study force and motion through Newton's First and Second Laws of Motion. Energy occurs as either potential or kinetic energy. Potential energy can take several forms, including gravitational, elastic, and chemical energy. Energy is conserved throughout systems by changing from one form to another and transfers through waves.

    D. Earth and space. Cycles within Sun, Earth, and Moon systems are studied as students learn about seasons and tides. Students identify that the Earth is divided into spheres and examine the processes within and organization of the geosphere. Researching the advantages and disadvantages of short- and long-term uses of resources enables informed decision making about resource management.

    E. Organisms and environments. All living organisms are made up of smaller units called cells. Ecosystems are organized into communities, populations, and organisms. Students compare and contrast variations within organisms and how they impact survival. Students examine relationships and interactions between organisms, biotic factors, and abiotic factors in an ecosystem.

2. Nature of science. Science, as defined by the National Academy of Sciences, is the "use of evidence to construct testable explanations and predictions of natural phenomena, as well as the knowledge generated through this process." This vast body of changing and increasing knowledge is described by physical, mathematical, and conceptual models. Students should know that some questions are outside the realm of science because they deal with phenomena that are not currently scientifically testable.

3. Scientific observations, inferences, hypotheses, and theories. Students are expected to know that:

    A. observations are active acquisition of either qualitative or quantitative information from a primary source through the senses;

    B. inferences are conclusions reached on the basis of observations or reasoning supported by relevant evidence;

    C. hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power that have been tested over a wide variety of conditions are incorporated into theories; and

    D. scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well established and highly reliable explanations, but they may be subject to change as new areas of science and new technologies are developed.

4. Science and social ethics. Scientific decision making is a way of answering questions about the natural world involving its own set of ethical standards about how the process of science should be carried out. Students distinguish between scientific decision-making practices and ethical and social decisions that involve science.

5. Recurring themes and concepts. Science consists of recurring themes and making connections between overarching concepts. Recurring themes include structure and function, systems, models, and patterns. All systems have basic properties that can be described in space, time, energy, and matter. Change and constancy occur in systems as patterns and can be observed, measured, and modeled. These patterns help to make predictions that can be scientifically tested. Models have limitations but provide a tool for understanding the ideas presented. Students analyze a system in terms of its components and how these components relate to each other, to the whole, and to the external environment.

6. Statements containing the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(b) Knowledge and Skills Statements

(1) Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:

(A) ask questions and define problems based on observations or information from text, phenomena, models, or investigations;

(i) ask questions based on observations or information from text, phenomena, models, or investigations

(ii) define problems based on observations or information from text, phenomena, models, or investigations

(B) use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems;

(i) use scientific practices to plan descriptive investigations

(ii) use scientific practices to plan comparative investigations

(iii) use scientific practices to plan experimental investigations

(iv) use scientific practices to conduct descriptive investigations

(v) use scientific practices to conduct comparative investigations

(vi) use scientific practices to conduct experimental investigations

(vii) use engineering practices to design solutions to problems

(C) use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards;

(i) use appropriate safety equipment during laboratory investigations as outlined in Texas Education Agency-approved safety standards

(ii) use appropriate safety equipment during classroom investigations as outlined in Texas Education Agency-approved safety standards

(iii) use appropriate safety equipment during field investigations as outlined in Texas Education Agency-approved safety standards

(iv) use appropriate safety practices during laboratory investigations as outlined in Texas Education Agency-approved safety standards

(v) use appropriate safety practices during classroom investigations as outlined in Texas Education Agency-approved safety standards

(vi) use appropriate safety practices during field investigations as outlined in Texas Education Agency-approved safety standards

(D) use appropriate tools such as graduated cylinders, metric rulers, periodic tables, balances, scales, thermometers, temperature probes, laboratory ware, timing devices, pH indicators, hot plates, models, microscopes, slides, life science models, petri dishes, dissecting kits, magnets, spring scales or force sensors, tools that model wave behavior, satellite images, hand lenses, and lab notebooks or journals;

(i) use appropriate tools

(E) collect quantitative data using the International System of Units (SI) and qualitative data as evidence;

(i) collect quantitative data using the International System of Units (SI)

(ii) collect qualitative data as evidence

(F) construct appropriate tables, graphs, maps, and charts using repeated trials and means to organize data;

(i) construct appropriate tables using repeated trials and means to organize data

(ii) construct appropriate graphs to organize data

(iii) construct appropriate maps to organize data

(iv) construct appropriate charts using repeated trials and means to organize data

(G) develop and use models to represent phenomena, systems, processes, or solutions to engineering problems; and

(i) develop models to represent phenomena, systems, processes, or solutions to engineering problems

(ii) use models to represent phenomena, systems, processes, or solutions to engineering problems

(H) distinguish between scientific hypotheses, theories, and laws.

(i) distinguish between scientific hypotheses, theories, and laws

(2) Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:

(A) identify advantages and limitations of models such as their size, scale, properties, and materials;

(i) identify advantages of models

(ii) identify limitations of models

(B) analyze data by identifying any significant descriptive statistical features, patterns, sources of error, or limitations;

(i) analyze data by identifying any significant descriptive statistical features, patterns, sources of error, or limitations

(C) use mathematical calculations to assess quantitative relationships in data; and

(i) use mathematical calculations to assess quantitative relationships in data

(D) evaluate experimental and engineering designs.

(i) evaluate experimental designs

(ii) evaluate engineering designs

(3) Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:

(A) develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories;

(i) develop explanations supported by data and consistent with scientific ideas

(ii) develop explanations supported by data and consistent with scientific principles

(iii) develop explanations supported by data and consistent with scientific theories

(iv) develop explanations supported by models and consistent with scientific ideas

(v) develop explanations supported by models and consistent with scientific principles

(vi) develop explanations supported by models and consistent with scientific theories

(vii) propose solutions supported by data and consistent with scientific ideas

(viii) propose solutions supported by data and consistent with scientific principles

(ix) propose solutions supported by data and consistent with scientific theories

(x) propose solutions supported by models and consistent with scientific ideas

(xi) propose solutions supported by models and consistent with scientific principles

(xii) propose solutions supported by models and consistent with scientific theories

(B) communicate explanations and solutions individually and collaboratively in a variety of settings and formats; and

(i) communicate explanations individually in a variety of settings

(ii) communicate explanations individually in a variety of formats

(iii) communicate explanations collaboratively in a variety of settings

(iv) communicate explanations collaboratively in a variety of formats

(v) communicate solutions individually in a variety of settings

(vi) communicate solutions individually in a variety of formats

(vii) communicate solutions collaboratively in a variety of settings

(viii) communicate solutions collaboratively in a variety of formats

(C) engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.

(i) engage respectfully in scientific argumentation using applied scientific explanations

(ii) engage respectfully in scientific argumentation using empirical evidence

(4) Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:

(A) relate the impact of past and current research on scientific thought and society, including the process of science, cost-benefit analysis, and contributions of diverse scientists as related to the content;

(i) relate the impact of past research on scientific thought, including the process of science as related to the content

(ii) relate the impact of past research on scientific thought, including the cost-benefit analysis as related to the content

(iii) relate the impact of past research on scientific thought, including the contributions of diverse scientists as related to the content

(iv) relate the impact of current research on scientific thought, including the process of science as related to the content

(v) relate the impact of current research on scientific thought, including the cost-benefit analysis as related to the content

(vi) relate the impact of current research on scientific thought, including the contributions of diverse scientists as related to the content

(vii) relate the impact of past research on society, including the process of science as related to the content

(viii) relate the impact of past research on society, including the cost-benefit analysis as related to the content

(ix) relate the impact of past research on society, including the contributions of diverse scientists as related to the content

(x) relate the impact of current research on society, including the process of science as related to the content

(xi) relate the impact of current research on society, including the cost-benefit analysis as related to the content

(xii) relate the impact of current research on society including the contributions of diverse scientists as related to the content

(B) make informed decisions by evaluating evidence from multiple appropriate sources to assess the credibility, accuracy, cost-effectiveness, and methods used; and

(i) make informed decisions by evaluating evidence from multiple appropriate sources to assess the credibility

(ii) make informed decisions by evaluating evidence from multiple appropriate sources to assess the accuracy

(iii) make informed decisions by evaluating evidence from multiple appropriate sources to assess the cost-effectiveness

(iv) make informed decisions by evaluating evidence from multiple appropriate sources to assess the methods used

(C) research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers.

(i) research STEM careers

(ii) explore resources to investigate STEM careers

(5) Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to:

(A) identify and apply patterns to understand and connect scientific phenomena or to design solutions;

(i) identify patterns to understand scientific phenomena or to design solutions

(ii) identify patterns to connect scientific phenomena or to design solutions

(iii) apply patterns to understand scientific phenomena or to design solutions

(iv) apply patterns to connect scientific phenomena or to design solutions

(B) identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems;

(i) identify cause-and-effect relationships to explain scientific phenomena or analyze problems

(ii) investigate cause-and-effect relationships to explain scientific phenomena or analyze problems

(C) analyze how differences in scale, proportion, or quantity affect a system's structure or performance;

(i) analyze how differences in scale, proportion, or quantity affect a system's structure or performance

(D) examine and model the parts of a system and their interdependence in the function of the system;

(i) examine the parts of a system

(ii) examine their [parts of a system] interdependence in the function of the system

(iii) model the parts of a system

(iv) model their [parts of a system] interdependence in the function of the system

(E) analyze and explain how energy flows and matter cycles through systems and how energy and matter are conserved through a variety of systems;

(i) analyze how energy flows through systems

(ii) analyze how matter cycles through systems

(iii) analyze how energy [is] conserved through a variety of systems

(iv) analyze how matter [is] conserved through a variety of systems

(v) explain how energy flows through systems

(vi) explain how matter cycles through systems

(vii) explain how energy [is] conserved through a variety of systems

(viii) explain how matter [is] conserved through a variety of systems

(F) analyze and explain the complementary relationship between the structure and function of objects, organisms, and systems; and

(i) analyze the complementary relationship between the structure and function of objects

(ii) analyze the complementary relationship between the structure and function of organisms

(iii) analyze the complementary relationship between the structure and function of systems

(iv) explain the complementary relationship between the structure and function of objects

(v) explain the complementary relationship between the structure and function of organisms

(vi) explain the complementary relationship between the structure and function of systems

(G) analyze and explain how factors or conditions impact stability and change in objects, organisms, and systems.

(i) analyze how factors or conditions impact stability in objects

(ii) analyze how factors or conditions impact stability in organisms

(iii) analyze how factors or conditions impact stability in systems

(iv) explain how factors or conditions impact stability in objects

(v) explain how factors or conditions impact stability in organisms

(vi) explain how factors or conditions impact stability in systems

(vii) analyze how factors or conditions impact change in objects

(viii) analyze how factors or conditions impact change in organisms

(ix) analyze how factors or conditions impact change in systems

(x) explain how factors or conditions impact change in objects

(xi) explain how factors or conditions impact change in organisms

(xii) explain how factors or conditions impact change in systems

(6) Matter and energy. The student knows that matter is made of atoms, can be classified according to its properties, and can undergo changes. The student is expected to:

(A) compare solids, liquids, and gases in terms of their structure, shape, volume, and kinetic energy of atoms and molecules;

(i) compare solids, liquids, and gases in terms of their structure

(ii) compare solids, liquids, and gases in terms of their shape

(iii) compare solids, liquids, and gases in terms of their volume

(iv) compare solids, liquids, and gases in terms of their kinetic energy of atoms

(v) compare solids, liquids, and gases in terms of their kinetic energy of molecules

(B) investigate the physical properties of matter to distinguish between pure substances, homogeneous mixtures (solutions), and heterogeneous mixtures;

(i) investigate the physical properties of matter to distinguish between pure substances, homogeneous mixtures (solutions), and heterogeneous mixtures

(C) identify elements on the periodic table as metals, nonmetals, metalloids, and rare Earth elements based on their physical properties and importance to modern life;

(i) identify elements on the periodic table as metals based on their physical properties

(ii) identify elements on the periodic table as nonmetals based on their physical properties

(iii) identify elements on the periodic table as metalloids based on their physical properties

(iv) identify elements on the periodic table as rare Earth elements based on their physical properties

(v) identify elements on the periodic table as metals based on their importance to modern life

(vi) identify elements on the periodic table as nonmetals based on their importance to modern life

(vii) identify elements on the periodic table as metalloids based on their importance to modern life

(viii) identify elements on the periodic table as rare Earth elements based on their importance to modern life

(D) compare the density of substances relative to various fluids; and

(i) compare the density of substances relative to various fluids

(E) identify the formation of a new substance by using the evidence of a possible chemical change, including production of a gas, change in thermal energy, production of a precipitate, and color change.

(i) identify the formation of a new substance by using the evidence of a possible chemical change, including production of a gas

(ii) identify the formation of a new substance by using the evidence of a possible chemical change, including change in thermal energy

(iii) identify the formation of a new substance by using the evidence of a possible chemical change, including production of a precipitate

(iv) identify the formation of a new substance by using the evidence of a possible chemical change, including color change

(7) Force, motion, and energy. The student knows the nature of forces and their role in systems that experience stability or change. The student is expected to:

(A) identify and explain how forces act on objects, including gravity, friction, magnetism, applied forces, and normal forces, using real-world applications;

(i) identify how forces act on objects, including gravity, using real-world applications

(ii) identify how forces act on objects, including friction, using real-world applications

(iii) identify how forces act on objects, including magnetism, using real-world applications

(iv) identify how forces act on objects, including applied forces, using real-world applications

(v) identify and explain how forces act on objects, including normal forces, using real-world applications

(vi) explain how forces act on objects, including gravity, using real-world applications

(vii) explain how forces act on objects, including friction, using real-world applications

(viii) explain how forces act on objects, including magnetism, using real-world applications

(ix) explain how forces act on objects, including applied forces, using real-world applications

(x) explain how forces act on objects, including normal forces, using real-world applications

(B) calculate the net force on an object in a horizontal or vertical direction using diagrams and determine if the forces are balanced or unbalanced; and

(i) calculate the net force on an object in a horizontal or vertical direction using diagrams

(ii) determine if the forces are balanced or unbalanced

(C) identify simultaneous force pairs that are equal in magnitude and opposite in direction that result from the interactions between objects using Newton's Third Law of Motion.

(i) identify simultaneous force pairs that are equal in magnitude and opposite in direction that result from the interactions between objects using Newton's Third Law of Motion

(8) Force, motion, and energy. The student knows that the total energy in systems is conserved through energy transfers and transformations. The student is expected to:

(A) compare and contrast gravitational, elastic, and chemical potential energies with kinetic energy;

(i) compare and contrast gravitational, elastic, and chemical potential energies with kinetic energy

(B) describe how energy is conserved through transfers and transformations in systems such as electrical circuits, food webs, amusement park rides, or photosynthesis; and

(i) describe how energy is conserved through transfers in systems

(ii) describe how energy is conserved through transformations in systems

(C) explain how energy is transferred through transverse and longitudinal waves.

(i) explain how energy is transferred through transverse waves

(ii) explain how energy is transferred through longitudinal waves

(9) Earth and space. The student models the cyclical movements of the Sun, Earth, and Moon and describes their effects. The student is expected to:

(A) model and illustrate how the tilted Earth revolves around the Sun, causing changes in seasons; and

(i) model how the tilted Earth revolves around the Sun, causing changes in seasons

(ii) illustrate how the tilted Earth revolves around the Sun, causing changes in seasons

(B) describe and predict how the positions of the Earth, Sun, and Moon cause daily, spring, and neap cycles of ocean tides due to gravitational forces.

(i) describe how the positions of the Earth, Sun, and moon cause daily cycles of ocean tides due to gravitational forces

(ii) describe how describe how the positions of the Earth, Sun, and moon cause spring cycles of ocean tides due to gravitational forces

(iii) describe how the positions of the Earth, Sun, and moon cause neap cycles of ocean tides due to gravitational forces

(iv) predict how the positions of the Earth, Sun, and moon cause daily cycles of ocean tides due to gravitational forces

(v) predict how describe how the positions of the Earth, Sun, and moon cause spring cycles of ocean tides due to gravitational forces

(vi) predict how the positions of the Earth, Sun, and moon cause neap cycles of ocean tides due to gravitational forces

(10) Earth and space. The student understands the rock cycle and the structure of Earth. The student is expected to:

(A) differentiate between the biosphere, hydrosphere, atmosphere, and geosphere and identify components of each system;

(i) differentiate between the biosphere, hydrosphere, atmosphere, and geosphere

(ii) identify components of [the biosphere]

(iii) identify components of [the hydrosphere]

(iv) identify components of [the atmosphere]

(v) identify components of [the geosphere]

(B) model and describe the layers of Earth, including the inner core, outer core, mantle, and crust; and

(i) model the layers of Earth, including the inner core

(ii) model the layers of Earth, including the outer core

(iii) model the layers of Earth, including the mantle

(iv) model the layers of Earth, including the crust

(v) describe the layers of Earth, including the inner core

(vi) describe the layers of Earth, including the outer core

(vii) describe the layers of Earth, including the mantle

(viii) describe the layers of Earth, including the crust

(C) describe how metamorphic, igneous, and sedimentary rocks form and change through geologic processes in the rock cycle.

(i) describe how metamorphic rocks form through geologic processes in the rock cycle

(ii) describe how igneous rocks form through geologic processes in the rock cycle

(iii) describe how sedimentary rocks form through geologic processes in the rock cycle

(iv) describe how metamorphic rocks change through geologic processes in the rock cycle

(v) describe how igneous rocks change through geologic processes in the rock cycle

(vi) describe how sedimentary rocks change through geologic processes in the rock cycle

(11) Earth and space. The student understands how resources are managed. The student is expected to:

(A) research and describe why resource management is important in reducing global energy, poverty, malnutrition, and air and water pollution, and

(i) research why resource management is important in reducing global energy

(ii) research why resource management is important in reducing poverty

(iii) research why resource management is important in reducing malnutrition

(iv) research why resource management is important in reducing air pollution

(v) research why resource management is important in reducing water pollution

(vi) describe why resource management is important in reducing global energy

(vii) describe why resource management is important in reducing poverty

(viii) describe why resource management is important in reducing malnutrition

(ix) describe why resource management is important in reducing air pollution

(x) describe why resource management is important in reducing water pollution

(B) explain how conservation, increased efficiency, and technology can help manage air, water, soil, and energy resources.

(i) explain how conservation can help manage air resources

(ii) explain how conservation can help manage water resources

(iii) explain how conservation can help manage soil resources

(iv) explain how conservation can help manage energy resources

(v) explain how increased efficiency can help manage air resources

(vi) explain how increased efficiency can help manage water resources

(vii) explain how increased efficiency can help manage soil resources

(viii) explain how increased efficiency can help manage energy resources

(ix) explain how technology can help manage air resources

(x) explain how technology can help manage water resources

(xi) explain how technology can help manage soil resources

(xii) explain how technology can help manage energy resources

(12) Organisms and environments. The student knows that interdependence occurs between living systems and the environment. The student is expected to:

(A) investigate how organisms and populations in an ecosystem depend on and may compete for biotic factors such as food and abiotic factors such as availability of light and water, range of temperatures, or soil composition;

(i) investigate how organisms in an ecosystem depend on biotic factors

(ii) investigate how organisms in an ecosystem may compete for biotic factors

(iii) investigate how organisms in an ecosystem depend on abiotic factors

(iv) investigate how organisms in an ecosystem may compete for abiotic factors

(v) investigate how populations in an ecosystem depend on biotic factors

(vi) investigate how populations in an ecosystem may compete for biotic factors

(vii) investigate how populations in an ecosystem depend on abiotic factors

(viii) investigate how populations in an ecosystem may compete for abiotic factors

(B) describe and give examples of predatory, competitive, and symbiotic relationships between organisms, including mutualism, parasitism, and commensalism; and

(i) describe predatory relationships between organisms

(ii) describe competitive relationships between organisms

(iii) describe symbiotic relationships between organisms, including mutualism

(iv) describe symbiotic relationships between organisms, including parasitism

(v) describe symbiotic relationships between organisms, including commensalism

(vi) give examples of predatory relationships between organisms

(vii) give examples of competitive relationships between organisms

(viii) give examples of symbiotic relationships between organisms, including mutualism

(ix) give examples of symbiotic relationships between organisms, including parasitism

(x) give examples of symbiotic relationships between organisms, including commensalism

(C) describe the hierarchical organization of organism, population, and community within an ecosystem.

(i) describe the hierarchical organization of organism, population, and community within an ecosystem

(13) Organisms and environments. The student knows that organisms have an organizational structure and variations can influence survival of populations. The student is expected to:

(A) describe the historical development of cell theory and explain how organisms are composed of one or more cells, which come from pre-existing cells and are the basic unit of structure and function;

(i) describe the historical development of cell theory

(ii) explain how organisms are composed of one or more cells, which come from pre-existing cells

(iii) explain how [cells] are the basic unit of structure and function

(B) identify and compare the basic characteristics of organisms, including prokaryotic and eukaryotic, unicellular and multicellular, and autotrophic and heterotrophic; and

(i) identify the basic characteristics of organisms, including prokaryotic

(ii) identify the basic characteristics of organisms, including eukaryotic

(iii) identify the basic characteristics of organisms, including unicellular

(iv) identify the basic characteristics of organisms, including multicellular

(v) identify the basic characteristics of organisms, including autotrophic

(vi) identify the basic characteristics of organisms, including heterotrophic

(vii) compare the basic characteristics of organisms, including prokaryotic and eukaryotic

(viii) compare the basic characteristics of organisms, including unicellular and multicellular

(ix) compare the basic characteristics of organisms, including autotrophic and heterotrophic

(C) describe how variations within a population can be an advantage or disadvantage to the survival of a population as environments change.

(i) describe how variations within a population can be an advantage or disadvantage to the survival of a population as environments change