Science, Grade 7

Subject: Science
Grade: 07
Expectations: 52
Breakouts: 225

(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 7, 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 have prior experience with elements in Grade 6 and develop an understanding that compounds are also pure substances in Grade 7. Students investigate the differences between elements and compounds through observations, descriptions of physical properties, and chemical reactions. Students build upon their understanding of solutions by exploring aqueous solutions.

    C. Force, motion, and energy. Students measure, calculate, graph, and investigate how forces impact linear motion. Students build upon their understanding of the laws of motions by exploring Newton's First Law of Motion. Temperature is a measure of the average kinetic energy of molecules. Thermal energy is transferred by conduction, convection, or radiation in order to reach thermal equilibrium.

    D. Earth and space. Students explore characteristics and organization of objects and the role of gravity within our solar system. Earth has a specific set of characteristics that allows life to exist. Students further their understanding of the geosphere by illustrating how Earth's features change over time through tectonic movement. Students investigate how humans depend on and affect the hydrosphere.

    E. Organisms and environments. Students further their understanding of organisms as systems made up of cells organized into tissues, tissues into organs, and organs into organ systems by identifying the main functions of the organs within the human body. During both sexual and asexual reproduction, traits are passed on to the next generation. Students understand how traits in populations can change through the processes of natural and artificial selection. Students analyze how energy flows through trophic levels and how biodiversity impacts an ecosystem's sustainability. Students gain an understanding of the taxonomic classifications of organisms and how characteristics determine their classification.

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 conduct descriptive investigations

(iii) use scientific practices to plan comparative investigations

(iv) use scientific practices to conduct comparative investigations

(v) use scientific practices to plan experimental 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 cost-benefit analysis as related to the content

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

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

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

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

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

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

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

(xii) relate the impact of current research on society, including 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) model the parts of a system

(iii) examine [the parts of a system's] interdependence in the function of the system

(iv) model [the parts of a system's] 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 structure and function of objects, organisms, and systems; and

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

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

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

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

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

(vi) explain the complementary relationship between 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 distinguishes between elements and compounds, classifies changes in matter, and understands the properties of solutions. The student is expected to:

(A) compare and contrast elements and compounds in terms of atoms and molecules, chemical symbols, and chemical formulas;

(i) compare and contrast elements and compounds in terms of atoms and molecules

(ii) compare and contrast elements and compounds in terms of chemical symbols and chemical formulas

(iii) compare and contrast elements in terms of atoms

(iv) compare and contrast elements in terms of chemical symbols

(v) compare and contrast compounds in terms of molecules

(vi) compare and contrast compounds in terms of chemical formulas

(B) use the periodic table to identify the atoms and the number of each kind within a chemical formula;

(i) use the periodic table to identify the atoms within a chemical formula

(ii) use the periodic table to identify the number of each kind [of atom] within a chemical formula

(C) distinguish between physical and chemical changes in matter;

(i) distinguish between physical and chemical changes in matter

(D) describe aqueous solutions in terms of solute and solvent, concentration, and dilution; and

(i) describe aqueous solutions in terms of solute

(ii) describe aqueous solutions in terms of solvent

(iii) describe aqueous solutions in terms of concentration

(iv) describe aqueous solutions in terms of dilution

(E) investigate and model how temperature, surface area, and agitation affect the rate of dissolution of solid solutes in aqueous solutions.

(i) investigate how temperature affect[s] the rate of dissolution of solid solutes in aqueous solutions

(ii) investigate how surface area affect[s] the rate of dissolution of solid solutes in aqueous solutions

(iii) investigate how agitation affect[s] the rate of dissolution of solid solutes in aqueous solutions

(iv) model how temperature affect[s] the rate of dissolution of solid solutes in aqueous solutions

(v) model how surface area affect[s] the rate of dissolution of solid solutes in aqueous solutions

(vi) model how agitation affect[s] the rate of dissolution of solid solutes in aqueous solutions

(7) Force, motion, and energy. The student describes the cause-and-effect relationship between force and motion. The student is expected to:

(A) calculate average speed using distance and time measurements from investigations;

(i) calculate average speed using distance measurements from investigations

(ii) calculate average speed using time measurements from investigations

(B) distinguish between speed and velocity in linear motion in terms of distance, displacement, and direction;

(i) distinguish between speed and velocity in linear motion in terms of distance

(ii) distinguish between speed and velocity in linear motion in terms of displacement

(iii) distinguish between speed and velocity in linear motion in terms of direction

(C) measure, record, and interpret an object's motion using distance-time graphs; and

(i) measure an object's motion

(ii) record an object's motion using distance-time graphs

(iii) interpret an object's motion using distance-time graphs

(D) analyze the effect of balanced and unbalanced forces on the state of motion of an object using Newton's First Law of Motion.

(i) analyze the effect of balanced forces on the state of motion of an object using Newton's First Law of Motion

(ii) analyze the effect of unbalanced forces on the state of motion of an object using Newton's First Law of Motion

(8) Force, motion, and energy. The student understands the behavior of thermal energy as it flows into and out of systems. The student is expected to:

(A) investigate methods of thermal energy transfer into and out of systems, including conduction, convection, and radiation;

(i) investigate methods of thermal energy transfer into systems, including conduction

(ii) investigate methods of thermal energy transfer into systems, including convection

(iii) investigate methods of thermal energy transfer into systems, including radiation

(iv) investigate methods of thermal energy transfer out of systems, including conduction

(v) investigate methods of thermal energy transfer out of systems, including convection

(vi) investigate methods of thermal energy transfer out of systems, including radiation

(B) investigate how thermal energy moves in a predictable pattern from warmer to cooler until all substances within the system reach thermal equilibrium; and

(i) investigate how thermal energy moves in a predictable pattern from warmer to cooler until all substances within the system reach thermal equilibrium

(C) explain the relationship between temperature and the kinetic energy of the particles within a substance.

(i) explain the relationship between temperature and the kinetic energy of the particles within a substance

(9) Earth and space. The student understands the patterns of movement, organization, and characteristics of components of our solar system. The student is expected to:

(A) describe the physical properties, locations, and movements of the Sun, planets, moons, meteors, asteroids, comets, Kuiper belt, and Oort cloud;

(i) describe the physical properties of the Sun

(ii) describe the physical properties of the planets

(iii) describe the physical properties of the moons

(iv) describe the physical properties of the meteors

(v) describe the physical properties of the asteroids

(vi) describe the physical properties of the comets

(vii) describe the physical properties of the Kuiper belt

(viii) describe the physical properties of the Oort cloud

(ix) describe the locations of the Sun

(x) describe the locations of the planets

(xi) describe the locations of the moons

(xii) describe the locations of the meteors

(xiii) describe the locations of the asteroids

(xiv) describe the locations of the comets

(xv) describe the locations of the Kuiper belt

(xvi) describe the locations of the Oort cloud

(xvii) describe the movements of the Sun

(xviii) describe the movements of the planets

(xix) describe the movements of the moons

(xx) describe the movements of the meteors

(xxi) describe the movements of the asteroids

(xxii) describe the movements of the comets

(xxiii) describe the movements of the Kuiper belt

(xxiv) describe the movements of the Oort cloud

(B) describe how gravity governs motion within Earth's solar system; and

(i) describe how gravity governs motion within Earth's solar system

(C) analyze the characteristics of Earth that allow life to exist such as the proximity of the Sun, presence of water, and composition of the atmosphere.

(i) analyze the characteristics of Earth that allow life to exist

(10) Earth and space. The student understands the causes and effects of plate tectonics. The student is expected to:

(A) describe the evidence that supports that Earth has changed over time, including fossil evidence, plate tectonics, and superposition; and

(i) describe the evidence that supports that Earth has changed over time, including fossil evidence

(ii) describe the evidence that supports that Earth has changed over time, including plate tectonics

(iii) describe the evidence that supports that Earth has changed over time, including superposition

(B) describe how plate tectonics causes ocean basin formation, earthquakes, mountain building, and volcanic eruptions, including supervolcanoes and hot spots.

(i) describe how plate tectonics causes ocean basin formation

(ii) describe how plate tectonics causes earthquakes

(iii) describe how plate tectonics causes mountain building

(iv) describe how plate tectonics causes volcanic eruptions, including supervolcanoes

(v) describe how plate tectonics causes volcanic eruptions, including hot spots

(11) Earth and space. The student understands how human activity can impact the hydrosphere. The student is expected to:

(A) analyze the beneficial and harmful influences of human activity on groundwater and surface water in a watershed; and

(i) analyze the beneficial influences of human activity on groundwater in a watershed

(ii) analyze the beneficial influences of human activity on surface water in a watershed

(iii) analyze the harmful influences of human activity on groundwater in a watershed

(iv) analyze the harmful influences of human activity on surface water in a watershed

(B) describe human dependence and influence on ocean systems and explain how human activities impact these systems.

(i) describe human dependence on ocean systems

(ii) describe human influence on ocean systems

(iii) explain how human activities impact these [ocean] systems

(12) Organisms and environments. The student understands that ecosystems are dependent upon the cycling of matter and the flow of energy. The student is expected to:

(A) diagram the flow of energy within trophic levels and describe how the available energy decreases in successive trophic levels in energy pyramids; and

(i) diagram the flow of energy within trophic levels

(ii) describe how the available energy decreases in successive trophic levels in energy pyramids

(B) describe how ecosystems are sustained by the continuous flow of energy and the recycling of matter and nutrients within the biosphere.

(i) describe how ecosystems are sustained by the continuous flow of energy within the biosphere

(ii) describe how ecosystems are sustained by the recycling of matter and nutrients within the biosphere

(13) Organisms and environments. The student knows how systems are organized and function to support the health of an organism and how traits are inherited. The student is expected to:

(A) identify and model the main functions of the systems of the human organism, including the circulatory, respiratory, skeletal, muscular, digestive, urinary, reproductive, integumentary, nervous, immune, and endocrine systems;

(i) identify the main functions of the systems of the human organism, including the circulatory system

(ii) identify the main functions of the systems of the human organism, including the respiratory system

(iii) identify the main functions of the systems of the human organism, including the skeletal system

(iv) identify the main functions of the systems of the human organism, including the muscular system

(v) identify the main functions of the systems of the human organism, including the digestive system

(vi) identify the main functions of the systems of the human organism, including the urinary system

(vii) identify the main functions of the systems of the human organism, including the reproductive system

(viii) identify the main functions of the systems of the human organism, including the integumentary system

(ix) identify the main functions of the systems of the human organism, including the nervous system

(x) identify the main functions of the systems of the human organism, including the immune system

(xi) identify the main functions of the systems of the human organism, including the endocrine systems

(xii) model the main functions of the systems of the human organism, including the circulatory system

(xiii) model the main functions of the systems of the human organism, including the respiratory system

(xiv) model the main functions of the systems of the human organism, including the skeletal system

(xv) model the main functions of the systems of the human organism, including the muscular system

(xvi) model the main functions of the systems of the human organism, including the digestive system

(xvii) model the main functions of the systems of the human organism, including the urinary system

(xviii) model the main functions of the systems of the human organism, including the reproductive system

(xix) model the main functions of the systems of the human organism, including the integumentary system

(xx) model the main functions of the systems of the human organism, including the nervous system

(xxi) model the main functions of the systems of the human organism, including the immune system

(xxii) model the main functions of the systems of the human organism, including the endocrine systems

(B) describe the hierarchical organization of cells, tissues, organs, and organ systems within plants and animals;

(i) describe the hierarchical organization of cells, tissues, organs, and organ systems within plants

(ii) describe the hierarchical organization of cells, tissues, organs, and organ systems within animals

(C) compare the results of asexual and sexual reproduction of plants and animals in relation to the diversity of offspring and the changes in the population over time; and

(i) compare the results of asexual and sexual reproduction of plants in relation to the diversity of offspring

(ii) compare the results of asexual and sexual reproduction of plants in relation to the changes in the population over time

(iii) compare the results of asexual and sexual reproduction of animals in relation to the diversity of offspring

(iv) compare the results of asexual and sexual reproduction of animals in relation to the changes in the population over time

(D) describe and give examples of how natural and artificial selection change the occurrence of traits in a population over generations.

(i) describe how natural selection change[s] the occurrence of traits in a population over generations

(ii) describe how artificial selection change[s] the occurrence of traits in a population over generations

(iii) give examples of how natural selection change[s] the occurrence of traits in a population over generations

(iv) give examples of how artificial selection change[s] the occurrence of traits in a population over generations

(14) Organisms and environments. The student knows how the taxonomic system is used to describe relationships between organisms. The student is expected to:

(A) describe the taxonomic system that categorizes organisms based on similarities and differences shared among groups; and

(i) describe the taxonomic system that categorizes organisms based on similarities and differences shared among groups

(B) describe the characteristics of the recognized kingdoms and their importance in ecosystems such as bacteria aiding digestion or fungi decomposing organic matter.

(i) describe the characteristics of the recognized kingdoms

(ii) describe the importance in ecosystems [of the recognized kingdoms]