

Course Syllabus

Science, Grade 10

Jefferson County Schools Curriculum, Final
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The Terra Nova Multiple Assessments Battery for Science "measures knowledge of key concepts and facility with science process skills. By applying scientific concepts to objects and situations that are familiar to them, students draw connections between what they learn in the classroom and what they find in their own lives. Engaging graphics, photographs, and page designs typify science instructional materials and invite students to participate fully in the test.

The test covers the traditional core areas of science - inquiry, physical science, life science, Earth and space sciences - and adds science and technology, science in personal and social perspectives, and the history and nature of science, as suggested in the National Science Education Standards. Implicit in many questions is the measurement of higher-order thinking skills - the student's ability to analyze, infer, synthesize, and evaluate."

The Tennessee Science Curriculum Standards provide standards, performance indicators, and accomplishments for students in science.

The Biology I End-of-course test is given after completion of Biology I.

Earth and Space Science

The Earth and Space Science unit addresses the composition, structure, exploration, and history of the earth and space. Topics include plate tectonics, the atmosphere, geological cycles and processes, weather, climate, the solar system, and the universe.

- The learner will be able to interpret the water cycle in the biosphere.
Source: TN: Gateway Test, 1999, Biology I, Std. 3.3.3 week tested: 36.
- The learner will be able to interpret the principal chemical cycles in the biosphere.
Source: TN: Gateway Test, 1999, Biology I, Std. 3.0 week tested: 36.
- The learner will be able to interpret the carbon, oxygen and nitrogen cycles in the biosphere.
Source: TN: Gateway Test, 1999, Biology I, Std. 3.3.3 week tested: 36.

- The learner will be able to interpret an illustration of the oxygen-carbon dioxide cycle.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, State Level 1 week tested: 36.
- The learner will be able to create a model or diagram of the oxygen-carbon dioxide cycle.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, Teacher Level 1 week tested: 36.
- The learner will be able to explore the impact of acid rain on the environment.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 2 week tested: 36.

Life Science

The Life Science unit addresses the characteristics and cycles of and relationships between living things and their environments. Topics include cellular organization, classification, ecosystems, genetics, and human health issues.

- The learner will be able to identify relationships among living things on the basis of structural parts, symmetry, metamorphosis and alternation of generations by integrating a comparative study of plant and animal anatomical structures.
Source: TN: Gateway Test, 1999, Biology I, Std. 5.5.3 week tested: 36.
- The learner will be able to explore the diversity of living things by interpreting classification systems, investigating different environments, and comparing life cycles.
Source: TN: Gateway Test, 1999, Biology I, Std. 5.0 week tested: 36.
- The learner will be able to diagram and label various reproductive cells utilizing a microscope or hand lens.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, Teacher Level 2 week tested: 36.
- The learner will be able to gather and/or survey a variety of fossils and associate them to biogeographical alterations.
Source: TN: Gateway Test, 1999, Biology I, Std. 6, Teacher Level 1 week tested: 36.

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- The learner will be able to study plant and animal specimens and find similarities and differences in their structural parts, symmetry and life cycles.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, Teacher Level 1 week tested: 36.
- The learner will be able to survey or model body plans with asymmetry, radial and bilateral symmetry.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, Teacher Level 2 week tested: 36.
- The learner will be able to interpret human population graphs to infer the effect on global resources, political systems and political systems.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 3 week tested: 36.
- The learner will be able to document his/her nutritional intake for one week, calculate the amount of caloric intake each day for each biomolecule, and assess his/her diet to create a plan of improvement.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 2 week tested: 36.
- The learner will be able to survey a habitat that is outside and recognize its living and nonliving factors, kinds of populations, producers, consumers and decomposers.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 1 week tested: 36.
- The learner will be able to research examples where human impact has altered an ecosystem using recent publications and prepare a written and/or oral presentation of his/her findings.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 2 week tested: 36.
- The learner will be able to gather data from local or regional records about population counts of a particular species found in the area and hypothesize what events might impact populations.
Source: TN: Gateway Test, 1999, Biology I, Std. 6, Teacher Level 3 week tested: 36.
- The learner will be able to gather data, create and analyze population graphs to find out if the population is stable, increasing or decreasing.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 2 week tested: 36.
- The learner will be able to plan and perform a controlled experiment to survey enzymatic actions and recognize potential sources of error.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 3 week tested: 36.
- The learner will be able to create and/or interpret a karyotype and recognize abnormalities for chromosome number, deletions and translocations.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, Teacher Level 3 week tested: 36.
- The learner will be able to investigate and assess DNA technologies from an ethical and scientific perspective.
Source: TN: Gateway Test, 1999, Biology I, Std. 4.0 week tested: 36.
- The learner will be able to model or survey the stages of complete and incomplete metamorphosis.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, Teacher Level 2 week tested: 36.
- The learner will be able to model or depict the movement of water, oxygen, nitrogen and carbon dioxide through a plant.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, Teacher Level 1 week tested: 36.
- The learner will be able to compute the ratio of cell surface area to cell volume.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 2 week tested: 36.
- The learner will be able to compare the organelles of various kinds of cells.
Source: TN: Gateway Test, 1999, Biology I, Std. 1,1.2 week tested: 36.
- The learner will be able to investigate the structure and function of organelles in the cell.
Source: TN: Gateway Test, 1999, Biology I, Std 1.0 week tested: 36.

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- The learner will be able to differentiate plant and animal cells.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, State Level 1 week tested: 36.
- The learner will be able to interpret a variety of cell processes.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, 1.4 week tested: 36.
- The learner will be able to find similarities and differences in the cell cycle of plant and animal cells.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, State Level 1 week tested: 36.
- The learner will be able to investigate the organelles of various kinds of cells.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, 1.2 week tested: 36.
- The learner will be able to make a three-dimensional model of a cell.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to explore how organisms and their environments interact through various relationships, population dynamics and behavior patterns.
Source: TN: Gateway Test, 1999, Biology I, Std. 2.0 week tested: 36.
- The learner will be able to create a diorama or time line that shows the alteration of living things over time.
Source: TN: Gateway Test, 1999, Biology I, Std. 6, Teacher Level 3 week tested: 36.
- The learner will be able to recognize the reactants and products of respiration when provided with the equations.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, State Level 1 week tested: 36.
- The learner will be able to order the steps of cellular respiration.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, Teacher Level 2 week tested: 36.
- The learner will be able to order the steps of anaerobic respiration.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, Teacher Level 2 week tested: 36.
- The learner will be able to find similarities and differences in the biological processes that are involved in energy transfer during photosynthesis and respiration.
Source: TN: Gateway Test, 1999, Biology I, Std. 3.0 week tested: 36.
- The learner will be able to investigate the efficiency of aerobic respiration.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, 3.4 week tested: 36.
- The learner will be able to investigate the efficiency of anaerobic respiration.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, 3.4 week tested: 36.
- The learner will be able to explore how respiration and photosynthesis relate.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, 3.2 week tested: 36.
- The learner will be able to connect the way that respiration and photosynthesis are dependant on one another to organisms.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to compare the efficiency of aerobic and anaerobic respiration.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, Teacher Level 3 week tested: 36.
- The learner will be able to differentiate between aerobic and anaerobic respiration with respect to the presence or absence of oxygen and the production of ATP.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, State Level 2 week tested: 36.
- The learner will be able to create charts showing the similarities and differences among the reactants, products and energy transfer in photosynthesis and respiration.
Source: TN: Gateway Test, 1999, Biology I, Std.

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- 3,Teacher Level 2 week tested: 36.
- The learner will be able to find differences between asexual and sexual reproduction.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.3, State Level 1 week tested: 36.
 - The learner will be able to find similarities between asexual and sexual reproduction.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.3 week tested: 36.
 - The learner will be able to recognize producers, consumers and decomposers in food chains or webs.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,Teacher Level 1 week tested: 36.
 - The learner will be able to group living things as producers, consumers, or decomposers when provided with their behaviors and environments.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,State Level 1 week tested: 36.
 - The learner will be able to build a model of an ecosystem in order to identify the general conditions required to maintain an ecosystem.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,Teacher Level 1 week tested: 36.
 - The learner will be able to maintain a model of an ecosystem.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,Teacher Level 2 week tested: 36.
 - The learner will be able to differentiate between abiotic and biotic components of the environment.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,2.2 week tested: 36.
 - The learner will be able to estimate the age of a fossil when provided with the amount of Carbon 14 atoms and the half-life of C-14.
Source: TN: Gateway Test, 1999, Biology I, Std. 6,Teacher Level 2 week tested: 36.
 - The learner will be able to find similarities and differences in the processes of fossil formation.
Source: TN: Gateway Test, 1999, Biology I, Std. 6,Teacher Level 1 week tested: 36.
 - The learner will be able to distinguish between the relative ages of a variety of fossils in sedimentary rock when provided with an illustration of rock strata.
Source: TN: Gateway Test, 1999, Biology I, Std. 6,State Level 1 week tested: 36.
 - The learner will be able to make pretend fossils utilizing casts and molds.
Source: TN: Gateway Test, 1999, Biology I, Std. 6,Teacher Level 1 week tested: 36.
 - The learner will be able to deduce which animals or plants are native to an environment when provided with illustrations of various organisms and descriptions of the environment.
Source: TN: Gateway Test, 1999, Biology I, Std. 5,State Level 1 week tested: 36.
 - The learner will be able to observe a variety of vertebrate embryos and compare their early embryonic development to demonstrate relatedness.
Source: TN: Gateway Test, 1999, Biology I, Std. 6,Teacher Level 2 week tested: 36.
 - The learner will be able to explore the ideas of genetics and heredity, various methods of reproduction, patterns of inheritance, and genetic disorders.
Source: TN: Gateway Test, 1999, Biology I, Std. 4.0 week tested: 36.
 - The learner will be able to distinguish between selective breeding and natural selection.
Source: TN: Gateway Test, 1999, Biology I, Std. 6,State Level 2 week tested: 36.
 - The learner will be able to compose a persuasive essay, using current scientific journals to support it, which associates a certain disease with particular lifestyle choices.
Source: TN: Gateway Test, 1999, Biology I, Std. 1,Teacher Level 1 week tested: 36.
 - The learner will be able to survey or depict the alternation of generations in a plant or animal species.
Source: TN: Gateway Test, 1999, Biology I, Std. 5,Teacher Level 2 week tested: 36.

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- The learner will be able to find similarities and differences in the life cycles of a variety of living things to include alternation of generations when provided with pictorial representations.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, State Level 3 week tested: 36.
- The learner will be able to research careers that have to do with the study of cells.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to research careers that have to do with diversity.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, Teacher Level 1 week tested: 36.
- The learner will be able to research careers that have to do with the environment.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 1 week tested: 36.
- The learner will be able to research careers that have to do with respiration and photosynthesis.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, Teacher Level 1 week tested: 36.
- The learner will be able to research careers that have to do with genetics and inheritance.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, Teacher Level 1 week tested: 36.
- The learner will be able to research careers that have to do with biological evolution.
Source: TN: Gateway Test, 1999, Biology I, Std. 6, Teacher Level 1 week tested: 36.
- The learner will be able to identify the transfer of energy from respiration to cellular work when provided with a diagram or an equation of the ATP cycle.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, State Level 3 week tested: 36.
- The learner will be able to explore the role of biomolecules in cell metabolism.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, 1.1 week tested: 36.
- The learner will be able to prepare wet mount slides.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to prepare a slide utilizing the correct staining technique.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 2 week tested: 36.
- The learner will be able to show the correct care and use of compound light microscopes.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to make a time line that shows the development of microscopes.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to utilize microscopes to study plant and animal cells.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to associate a time line showing the development of the microscope with cytology.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to estimate the function of an organ when provided with descriptions of its component tissues.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, State Level 3 week tested: 36.
- The learner will be able to estimate the function of a system when provided with descriptions of the properties of its component organs.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, Teacher Level 2 week tested: 36.
- The learner will be able to estimate the function of an organ or system when provided with structural descriptions whether in the earthworm, crayfish, frog or human.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, State Level 2 week tested: 36.

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- The learner will be able to find similarities and differences in the organs and organ systems of a variety of plant and animal species with respect to their structural parts and functions.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, Teacher Level 3 week tested: 36.
- The learner will be able to associate the survival of living things to their behaviors and adaptations.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 3 week tested: 36.
- The learner will be able to associate the learned and innate behaviors of organisms to their survival.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,2.4 week tested: 36.
- The learner will be able to estimate the kinds of plant and animal life that might be native to a biome by determining the properties of the biome.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, Teacher Level 1 week tested: 36.
- The learner will be able to deduce in what biome an animal or plant lives when provided with a description of the organism and illustrations of a variety of biomes.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, State Level 1 week tested: 36.
- The learner will be able to depict or create a biome for particular plant and animal species by finding out the requirements of the species.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, Teacher Level 1 week tested: 36.
- The learner will be able to recognize the relatedness of species utilizing DNA strands.
Source: TN: Gateway Test, 1999, Biology I, Std. 6, State Level 3 week tested: 36.
- The learner will be able to estimate how the formation or extinction of a species will be encouraged or discouraged by environmental alterations.
Source: TN: Gateway Test, 1999, Biology I, Std. 6, State Level 1 week tested: 36.
- The learner will be able to compare homologous structures in species to establish the relatedness of particular species when provided with illustrations of the species.
Source: TN: Gateway Test, 1999, Biology I, Std. 6, State Level 2 week tested: 36.
- The learner will be able to explore how the emergence of a new species can be affected by natural selection, mutations and adaptations.
Source: TN: Gateway Test, 1999, Biology I, Std. 6,6.2 week tested: 36.
- The learner will be able to identify the contributions of scientists, including Darwin, that led to the idea of evolution.
Source: TN: Gateway Test, 1999, Biology I, Std. 6,6.3 week tested: 36.
- The learner will be able to transfer knowledge of divergent evolution to establish why species with shared ancestors have adapted differently when provided with a diagram of the various species.
Source: TN: Gateway Test, 1999, Biology I, Std. 6, State Level 2 week tested: 36.
- The learner will be able to provide evidence for evolution utilizing current knowledge of DNA and comparative anatomy.
Source: TN: Gateway Test, 1999, Biology I, Std. 6,6.4 week tested: 36.
- The learner will be able to analyze the evidence for biological evolution.
Source: TN: Gateway Test, 1999, Biology I, Std. 6.0 week tested: 36.
- The learner will be able to analyze the fossil evidence for biological evolution.
Source: TN: Gateway Test, 1999, Biology I, Std. 6,6.1 week tested: 36.
- The learner will be able to explore the forces of natural selection on the development of living things.
Source: TN: Gateway Test, 1999, Biology I, Std. 6.0 week tested: 36.

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- The learner will be able to assess the fossil evidence for biological evolution.
Source: TN: Gateway Test, 1999, Biology I, Std. 6,6.1 week tested: 36.
- The learner will be able to identify the two principal functions of DNA, replication and protein synthesis, when provided with illustrations depicting a strand of bases with a complimentary strand.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,State Level 2 week tested: 36.
- The learner will be able to recognize a DNA molecule when provided with a selection between various structural formulas.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,Teacher Level 2 week tested: 36.
- The learner will be able to describe replication by utilizing models of DNA and RNA.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,Teacher Level 2 week tested: 36.
- The learner will be able to explain how DNA can be interpreted to recognize the individual from whom the DNA came.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,State Level 2 week tested: 36.
- The learner will be able to interpret DNA fingerprinting utilizing an illustration of DNA bands.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,State Level 2 week tested: 36.
- The learner will be able to explore the structure of DNA.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.1 week tested: 36.
- The learner will be able to explore the molecular makeup of DNA.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.1 week tested: 36.
- The learner will be able to connect the process of replication to the structure of DNA and RNA.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.2 week tested: 36.
- The learner will be able to explore the molecular makeup of RNA.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.1 week tested: 36.
- The learner will be able to explore the structure of RNA.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.1 week tested: 36.
- The learner will be able to compare DNA sequences to establish the relatedness of various living things.
Source: TN: Gateway Test, 1999, Biology I, Std. 5,Teacher Level 3 week tested: 36.
- The learner will be able to make a model of DNA.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,Teacher Level 1 week tested: 36.
- The learner will be able to create charts showing the similarities and differences in the structure, functions and molecular composition of DNA and RNA.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,Teacher Level 2 week tested: 36.
- The learner will be able to interpret various behaviors in order to establish if they are learned or innate.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,2.4, State Level 3 week tested: 36.
- The learner will be able to explore the behaviors of living things.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,Teacher Level 3 week tested: 36.
- The learner will be able to explain the habitat and niche of a living thing in an ecosystem.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,Teacher Level 1 week tested: 36.
- The learner will be able to investigate how the activities of people change ecosystems.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,State Level 2 week tested: 36.
- The learner will be able to study the impact of human activity on ecosystems.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,2.6 week tested: 36.

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- The learner will be able to recognize the chloroplasts in a leaf.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, Teacher Level 1 week tested: 36.
- The learner will be able to recognize basic cell parts.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, State Level 1 week tested: 36.
- The learner will be able to investigate the chloroplasts in a leaf.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, Teacher Level 1 week tested: 36.
- The learner will be able to explore the structure and function of the biomolecules in cells with respect to cellular processes.
Source: TN: Gateway Test, 1999, Biology I, Std 1.0 week tested: 36.
- The learner will be able to explore the role of biomolecules in cell structure.
Source: TN: Gateway Test, 1999, Biology I, Std. 1,1.1 week tested: 36.
- The learner will be able to explore the roles of producers, consumers, and decomposers in an ecosystem.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,2.5 week tested: 36.
- The learner will be able to show the flow of energy through an ecosystem from the sun to producers, consumers, and decomposers.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 2 week tested: 36.
- The learner will be able to interpret the flow of energy in ecosystems utilizing pyramids of energy and biomass.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,2.3 week tested: 36.
- The learner will be able to study the flow and loss of energy through the trophic levels of an ecosystem using a sketch of an energy pyramid.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, State Level 2 week tested: 36.
- The learner will be able to infer how environmental factors would impact population growth.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, State Level 2 week tested: 36.
- The learner will be able to find similarities and difference in analogous and homologous structures of living things to show relatedness.
Source: TN: Gateway Test, 1999, Biology I, Std. 6, Teacher Level 2 week tested: 36.
- The learner will be able to deduce the body symmetry of a living thing when provided with an illustration of the living thing.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, State Level 2 week tested: 36.
- The learner will be able to identify the types of living things found at the base of a food chain.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 1 week tested: 36.
- The learner will be able to use graphs to analyze population growth curves.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, State Level 2 week tested: 36.
- The learner will be able to interpret a graph of the distribution of the population of peppered moths as their environment altered.
Source: TN: Gateway Test, 1999, Biology I, Std. 6, Teacher Level 2 week tested: 36.
- The learner will be able to recognize a positive test for carbohydrates and lipids when provided with an experimental procedure, data and results.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, State Level 2 week tested: 36.
- The learner will be able to recognize the biomolecules responsible for communicating, regulating or reproducing in the cell.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, State Level 3 week tested: 36.
- The learner will be able to perform a test to detect if proteins are present.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 3 week tested: 36.

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- The learner will be able to differentiate between proteins, lipids, carbohydrates and nucleic acids when provided with structural diagrams.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, State Level 2 week tested: 36.
- The learner will be able to find similarities and differences in the chemistry of biomolecules.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, 1.1 week tested: 36.
- The learner will be able to perform an investigation to recognize carbohydrates and lipids.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 2 week tested: 36.
- The learner will be able to make a model of each biomolecule.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 2 week tested: 36.
- The learner will be able to recognize the cell part in which photosynthesis happens when provided with an illustration of a plant.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, State Level 1 week tested: 36.
- The learner will be able to recognize the reactants and products of photosynthesis when provided with the equations.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, State Level 1 week tested: 36.
- The learner will be able to show that oxygen is produced during photosynthesis in a laboratory exploration.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, Teacher Level 2 week tested: 36.
- The learner will be able to find similarities and differences in the light and dark reactions of photosynthesis.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, 3.1 week tested: 36.
- The learner will be able to create concept maps showing the principal events which occur in the light and dark reactions.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, Teacher Level 3 week tested: 36.
- The learner will be able to explore the adaptations of living things.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 3 week tested: 36.
- The learner will be able to determine how many chromosomes there are after mitosis or meiosis when provided with the number of chromosomes in the original cell.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, State Level 2 week tested: 36.
- The learner will be able to model or survey the movement of chromosomes during mitosis in plant and animal cells.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to order a series of illustrations showing the movement of chromosomes during mitosis.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, State Level 1 week tested: 36.
- The learner will be able to model or survey the movement of chromosomes during meiosis in plant and animal cells.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, Teacher Level 1 week tested: 36.
- The learner will be able to judge the role of meiosis in maintaining genetic variability and continuity.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, State Level 2 week tested: 36.
- The learner will be able to identify sex linked patterns of inheritance utilizing a pedigree.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, State Level 2 week tested: 36.
- The learner will be able to recognize causes of genetic diseases in plants and animals.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, 4.7 week tested: 36.

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- The learner will be able to recognize the impact of genetic diseases in plants and animals.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.7 week tested: 36.
- The learner will be able to use Mendel's laws to predict offspring.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.4 week tested: 36.
- The learner will be able to find out the probability of a child having cystic fibrosis, sickle cell anemia or Tay-Sachs if both parents are carriers.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,State Level 2 week tested: 36.
- The learner will be able to analyze modes of inheritance involving sex-linkage, co-dominance, incomplete dominance, multiple alleles and polygenic traits.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.5 week tested: 36.
- The learner will be able to analyze modes of inheritance involving co-dominance, incomplete dominance, multiple alleles and polygenic traits utilizing genetic problems or Punnett squares.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,State Level 2 week tested: 36.
- The learner will be able to estimate the genotype and phenotype of a monohybrid cross when provided with a Punnett square.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,State Level 1 week tested: 36.
- The learner will be able to interpret a dihybrid cross when provided with a completed Punnett square to find out the probability of a specific trait.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,State Level 3 week tested: 36.
- The learner will be able to explore factors that affect the Hardy-Weinberg equilibrium.
Source: TN: Gateway Test, 1999, Biology I, Std. 2,Teacher Level 3 week tested: 36.
- The learner will be able to make a monohybrid cross when given a genetic problem to solve.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,Teacher Level 1 week tested: 36.
- The learner will be able to make a dihybrid cross and utilize it to estimate genotypic and phenotypic ratios.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,Teacher Level 2 week tested: 36.
- The learner will be able to deduce what kinds of living things are indigenous to certain environments in the principal biomes that are on the earth.
Source: TN: Gateway Test, 1999, Biology I, Std. 5,5.2 week tested: 36.
- The learner will be able to identify the importance of homeostasis to the viability of humans and other living things when provided with the definition of homeostasis.
Source: TN: Gateway Test, 1999, Biology I, Std. 1,State Level 2 week tested: 36.
- The learner will be able to show the movement of molecules across a semi-permeable membrane.
Source: TN: Gateway Test, 1999, Biology I, Std. 1,Teacher Level 1 week tested: 36.
- The learner will be able to estimate the movement of water molecules across the membrane of the cell when provided with various concentrations.
Source: TN: Gateway Test, 1999, Biology I, Std. 1,State Level 1 week tested: 36.
- The learner will be able to differentiate between active and passive transport when provided with examples of various molecules.
Source: TN: Gateway Test, 1999, Biology I, Std. 1,State Level 2 week tested: 36.
- The learner will be able to find the genus and species of a living thing using a dichotomous key which includes the descriptions of the property of each classification level.
Source: TN: Gateway Test, 1999, Biology I, Std. 5,State Level 2 week tested: 36.

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- The learner will be able to classify various organisms by utilizing a dichotomous key and properties of the organisms.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, Teacher Level 2 week tested: 36.
- The learner will be able to compare historically relevant classification systems utilized in biology.
Source: TN: Gateway Test, 1999, Biology I, Std. 5,5.1 week tested: 36.
- The learner will be able to model the process of recombinant DNA.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, Teacher Level 2 week tested: 36.
- The learner will be able to explore the scientific and ethical implications of genetic engineering, recombinant DNA, selective breeding, hybridization, cell and tissue culturing, transgenic animals, and DNA fingerprinting.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.8 week tested: 36.
- The learner will be able to research a position paper defending perspectives on the ethics of a chosen group of DNA technologies.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, Teacher Level 3 week tested: 36.
- The learner will be able to debate the scientific and ethical issues related to current emerging DNA technologies and/or the Human Genome Project.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, Teacher Level 2 week tested: 36.
- The learner will be able to assess current and future DNA technologies, including recombinant DNA, by utilizing an ethical model.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, Teacher Level 3 week tested: 36.
- The learner will be able to recognize the sex chromosomes in people.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, State Level 2 week tested: 36.
- The learner will be able to describe transcription by utilizing models of DNA and RNA.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, Teacher Level 2 week tested: 36.
- The learner will be able to describe translation by utilizing models of DNA and RNA.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, Teacher Level 2 week tested: 36.
- The learner will be able to distinguish between transcription and translation when provided with illustrations.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, State Level 3 week tested: 36.
- The learner will be able to connect the process of protein synthesis to the structure of DNA and RNA.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.2 week tested: 36.
- The learner will be able to demonstrate various kinds of mutations by manipulating a DNA model.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, Teacher Level 3 week tested: 36.
- The learner will be able to explore causes of mutations.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.6 week tested: 36.
- The learner will be able to explore the impact of mutations.
Source: TN: Gateway Test, 1999, Biology I, Std. 4,4.6 week tested: 36.
- The learner will be able to interpret a series of DNA bases to establish the sequence which depicts a mutation.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, State Level 2 week tested: 36.
- The learner will be able to estimate the role mutations play in the survival of a population.
Source: TN: Gateway Test, 1999, Biology I, Std. 6, Teacher Level 2 week tested: 36.

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The learner will be able to connect the causes of mutations to alterations in the DNA instructions when provided with illustrations.

Source: TN: Gateway Test, 1999, Biology I, Std. 4, State Level 1 week tested: 36.

- The learner will be able to recognize the dominant trait when provided with the results of a monohybrid cross.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, State Level 1 week tested: 36.
- The learner will be able to differentiate between dominant and recessive traits when provided with the results of a monohybrid cross.
Source: TN: Gateway Test, 1999, Biology I, Std. 4, Teacher Level 1 week tested: 36.
- The learner will be able to establish if an insect undergoes complete or incomplete metamorphosis when provided with illustrations of the insect in its stages of development.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, State Level 2 week tested: 36.
- The learner will be able to recognize an example of mutualism.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, State Level 1 week tested: 36.
- The learner will be able to recognize an example of commensalism.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, State Level 1 week tested: 36.
- The learner will be able to recognize an example of parasitism.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, State Level 1 week tested: 36.
- The learner will be able to find similarities and differences in various kinds of symbiotic relationships.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, 2.1 week tested: 36.
- The learner will be able to find similarities and differences in the three kinds of symbiotic relationships: parasitism, commensalism and mutualism.
Source: TN: Gateway Test, 1999, Biology I, Std.

2, Teacher Level 1 week tested: 36.

- The learner will be able to explore the effect of parasites on human population.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 2 week tested: 36.
- The learner will be able to explore the significance of fermentation to the pharmaceutical, agricultural, and food and beverage industries.
Source: TN: Gateway Test, 1999, Biology I, Std. 3, Teacher Level 2 week tested: 36.
- The learner will be able to research the economic and political effect of recycling on nonrenewable resources.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 3 week tested: 36.
- The learner will be able to assess the economic and political effect of recycling on nonrenewable resources.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, Teacher Level 3 week tested: 36.
- The learner will be able to explore the structure and function of cell membranes.
Source: TN: Gateway Test, 1999, Biology I, Std 1.0 week tested: 36.
- The learner will be able to explore the makeup of the cell membrane.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, 1.3 week tested: 36.
- The learner will be able to explore the importance of the cell membrane to homeostasis.
Source: TN: Gateway Test, 1999, Biology I, Std. 1, 1.3 week tested: 36.
- The learner will be able to recognize abiotic and biotic factors in an ecosystem.
Source: TN: Gateway Test, 1999, Biology I, Std. 2, State Level 2 week tested: 36.

Physical Science

The Physical Science unit includes concepts related to matter, forces, motion, and energy, as well as their interactions. Topics include chemical and physical changes, electricity, magnetism, heat, light, sound, machines, work

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and power.

- The learner will be able to create a rationale for a classification system for a set of given objects.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, Teacher Level 1 week tested: 36.

Research and Inquiry

The Research and Inquiry unit focuses on the knowledge, processes, and real world issues associated with science and technology. Topics include experimentation, data analysis, science related careers, and technological advances.

- The learner will be able to explain the advantages and disadvantages of a variety of kinds of classification systems including the Aristotelian, Linnean and DNA sequencing systems.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, Teacher Level 2 week tested: 36.
- The learner will be able to deduce the relatedness of various living things utilizing the Linnean system of classification when provided with various plants or animals and a classification key of living things.
Source: TN: Gateway Test, 1999, Biology I, Std. 5, State Level 1 week tested: 36.
- The learner will be able to create various systems for classification.
Source: TN: Gateway Test, 1999, Biology I, Std. 5,5.1 week tested: 36.