

Table 1
Reporting Categories and Performance Level Indicators for the *Gateway Science*
Operational Test

Reporting Category, Objective, and Subskill
<p>A. Cell Organelles and Biomolecules Cells</p> <p>Cells</p> <p>1.1.A Identify major cell organelles, given a diagram</p> <p>1.1.B Distinguish between plant and animal cells given diagrams or scenarios</p> <p>1.2.F Distinguish proteins, carbohydrates., lipids, and nucleic acids, given structural diagrams</p> <p>1.2.G Identify a positive test for carbohydrates or lipids when given an experimental procedure, data, and results</p> <p>1.3.M Identify the biomolecules responsible for communicating, responding, regulating, or reproducing in the cell</p>
<p>B. Cell Processes Cells</p> <p>Cells</p> <p>1.1.C Predict the movement of water molecules across the cell membrane, given solutions of different concentrations</p> <p>1.1.D Sequence a series of diagrams depicting the movement of chromosomes during mitosis</p> <p>1.1.E Compare and contrast the cell cycle in plant and animal cells, given a diagram or description</p> <p>1.2.H Distinguish between active and passive transport, given examples of different molecules</p> <p>1.2.J Evaluate the role of meiosis in maintaining genetic variability and continuity, given a scenario</p> <p>1.2.K Determine the number of chromosomes following mitosis or meiosis, given the number of chromosomes in the original cell</p> <p>1.2.L Recognize the significance of homeostasis to the viability of humans and other organisms, given the definition of homeostasis</p>
<p>C. Interactions: Between Organisms and Behavior Interactions</p> <p>Interactions</p> <p>2.1.A Identify commensalism, parasitism, and mutualism, given a scenario with examples</p> <p>2.1.B Classify organisms as producers, consumers, or decomposers, given their behaviors and environment</p> <p>2.2.C Identify abiotic and biotic factors, given a description or an illustration of an ecosystem</p> <p>2.3.H Distinguish between a learned or an innate behavior, given a description of that behavior in a scenario</p> <p>Biological Evolution</p> <p>6.1.A Differentiate between the relative age of various fossils in sedimentary rock, given a diagram of rock strata</p>

Table 4 (continued)
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<p>D. Interactions: Population Dynamics and Energy Flow</p> <p>Interactions</p> <p>2.2.D Make inferences about how environmental factors would affect population growth, given a scenario</p> <p>2.2.E Examine the energy flow and loss through the trophic levels of an ecosystem, given an illustration of an energy pyramid</p> <p>2.2.F Determine the effects of human activities on ecosystems, given a scenario</p> <p>2.2.G Analyze and interpret population growth curves, given graphs</p> <p>Biological Evolution</p> <p>6.1.B Predict how environmental changes will encourage or discourage the formation of a new species or extinction of an existing species, given a written scenario</p> <p>6.2.E Differentiate between natural selection and selective breeding, given a scenario</p>
<p>E. Photosynthesis and Respiration</p> <p>Photosynthesis and Respiration</p> <p>3.1.A Identify the reactants and products of photosynthesis and respiration, given the equations</p> <p>3.1.B Identify the cell organelle in which photosynthesis occurs, given a diagram of a plant</p> <p>3.1.C Interpret a diagram of the oxygen-carbon dioxide cycle, given a diagram</p> <p>3.2.D Distinguish between aerobic and anaerobic respiration in terms of the presence or absence of oxygen and ATP produced</p> <p>3.2.E Relate the interdependence of the processes of photosynthesis and respiration to living organisms, given a diagram or a description</p> <p>3.3.F Recognize the transfer of energy from respiration to cellular work, given an equation or diagram of the ATP cycle</p>
<p>F. Genetics</p> <p>Genetics and Biotechnology</p> <p>4.1.A Distinguish between asexual and sexual methods of reproduction, using a scenario</p> <p>4.1.B Identify the dominant trait, given the results of a monohybrid cross in a scenario</p> <p>4.1.C Determine the genotype and phenotype of a monohybrid cross, given a Punnett square</p> <p>4.2.F Identify the sex chromosomes in humans and recognize inheritance patterns that are sex-linked, using a pedigree</p> <p>4.2.G Analyze modes of inheritance including codominance, incomplete dominance, polygenic, and multiple alleles using genetic problems or Punnett squares</p> <p>4.2.K Determine the probability of having a child with cystic fibrosis, sickle cell, anemia, or Tay-Sachs if both parents are carriers, given a scenario or genetic problem</p> <p>4.3.M Analyze a dihybrid cross given a completed Punnett square to determine the probability of a particular trait</p>

Table 4 (concluded)
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<p>G. Biotechnology/DNA</p> <p>Genetics and Biotechnology</p> <p>4.1.D Relate changes in the DNA instructions to cause mutations, given diagrams</p> <p>4.2.E Recognize the two major functions of DNA as replication and protein synthesis, given diagrams showing a strand of bases with a complimentary strand</p> <p>4.2.H Analyze a series of DNA bases to determine the sequence which demonstrates a mutation</p> <p>4.2.J Describe and analyze DNA fingerprinting using an illustration of DNA bands</p> <p>4.3.L Differentiate the processes of transcription and translation, given diagrams</p> <p>Biological Evolution</p> <p>6.3.F Recognize the relatedness of species using DNA strands</p>
<p>H. Diversity: Biomes and Classification</p> <p>Diversity</p> <p>5.1.A Infer animals or plants indigenous to an environment, given pictures or diagrams of the organisms and a description of the environment</p> <p>5.1.B Infer the biome in which an animal or plant lives, given a description of the organism and pictures of various biomes</p> <p>5.1.C Infer the relatedness of different organisms using the Linnean system of classification, given pictures of a variety of different plants or animals and a key to classification of organisms</p> <p>5.2.D Determine the genus and species of an organism, given a dichotomous key containing description of the characteristic of each classification level</p> <p>Biological Evolution</p> <p>6.2.C Transfer knowledge of divergent evolution, as in Darwin’s finches, to determine why species with a common ancestor have adapted differently, given a diagram of the various species 0 1</p> <p>6.2.D Compare homologous structures in species, to determine the relatedness of certain species, given diagrams or pictures of each</p>
<p>I. Diversity: Body Systems and Life Cycles</p> <p>Diversity</p> <p>5.2.E Determine whether an insect undergoes complete or incomplete metamorphs given pictures or diagrams of the insect in the stages of development</p> <p>5.2.F Infer the body symmetry of an organism, given a diagram or picture of the organism</p> <p>5.2.G Predict the function of system or organ, given structural descriptions, whether in the earthworm, crayfish, frog, or human</p> <p>5.3.H Compare and contrast the life cycles of various organisms to include alternation of generations, given diagrams or pictures.</p> <p>5.3.J Compare and contrast life cycles of various organisms to include alternation of generations, given pictorial representations.</p>