

# Houston County School District

## Formative Assessments Pacing Guide for Science AHSGE Objectives

Objectives and Eligible Content	Vocabulary	Resources	Date Introduced	Date Tested	% Mastery
<p>1. Select appropriate laboratory glassware, balances, time measuring equipment, and optical instruments to conduct an experiment.</p> <ul style="list-style-type: none"> <li>• Select appropriate glassware for conducting experiments including a graduated cylinder, a beaker, a flask, a test tube, a microscope slide, a pipette, and a Petri dish.</li> <li>• Select appropriate measuring equipment for conducting experiments including a balance and a stopwatch.</li> <li>• Select appropriate optical instruments for conducting experiments including a compound microscope, an electron microscope, and a magnifying glass.</li> </ul>	Graduated cylinder Balance Stopwatch Beaker, Flask Test tube Microscope Microscope slide Compound microscope Electron microscope Petri dish, Pipette Magnifying glass	Item Specs. Power Point of Voc. Append. B, C, D Ch. 1	August	October	
<p>2. Describe cell processes necessary for achieving homeostasis, including active and passive transport, osmosis, diffusion, exocytosis, and endocytosis.</p> <ul style="list-style-type: none"> <li>• Recognize and apply the definition of homeostasis. (The ability of an organism or cell to maintain internal balance and stability by adjusting its physiological processes.)</li> <li>• Recognize and apply the definition of active transport. (The movement of a substance across a biological membrane against its concentration or electrochemical gradient with the help of energy input and specific transport proteins.)</li> <li>• Recognize and apply the definition of passive transport. (The diffusion of a substance across a biological membrane.)</li> <li>• Recognize and apply the definition of osmosis. (The movement of water across a selectively permeable membrane.)</li> <li>• Recognize and apply the definition of diffusion. (The spontaneous tendency of a substance to move down its concentration gradient from a more concentrated to a less concentrated area.)</li> <li>• Recognize and apply the definition of exocytosis. (The cellular secretion of macromolecules by the fusion of vesicles with the cell membrane.)</li> <li>• Recognize and apply the definition of endocytosis. (The cellular uptake of macromolecules and particulate substances by localized regions of the cell membrane that surround the substance and pinch off to form an intracellular vesicle.)</li> </ul>	Homeostasis Active transport Passive transport Osmosis Diffusion Exocytosis Endocytosis Plasma Membrane Phospholipids Selectively permeable Concentration gradient Macromolecules Vesicles Polar Non polar Transport proteins Isotonic Hypertonic hypotonic	Ch. 7	September 3-4	October	

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Objectives and Eligible Content	Vocabulary	Resources	Date to be taught	Date Tested	% Mastery
<p><b>3.</b> Identify reactants and products associated with photosynthesis and cellular respiration, and the purposes of these two processes.</p> <ul style="list-style-type: none"> <li>• Identify the chemical formula for photosynthesis.</li> <li>• Identify the function of photosynthesis.</li> <li>• Identify the chemical formula for respiration.</li> <li>• Identify the function of respiration.</li> <li>• Identify the relationship between photosynthesis and respiration.</li> </ul>	Reactant Product Photosynthesis Cellular respiration Chemical formula Glucose Water, Oxygen Carbon dioxide	Ch. 8-9	1 <sup>st</sup> of November	December	
<p><b>4.</b> Describe similarities and differences of cell organelles, using diagrams and tables.</p> <p><b>9.</b> Differentiate between the previous five-kingdom and current six-kingdom classification systems.</p> <ul style="list-style-type: none"> <li>• Identify cell structures including cell membrane, cell wall, nucleus, ribosome, smooth endoplasmic reticulum, rough endoplasmic reticulum, Golgi body, vacuole, chloroplast, and mitochondrion.</li> <li>• Classify organisms as prokaryotic or eukaryotic.</li> <li>• Identify and define similarities and differences between the five-kingdom and six-kingdom classification systems.</li> </ul>	-jello/cake/ cookie lab Cell membrane Plasma membrane Cell wall, Nucleus Ribosome Smooth/rough endoplasmic reticulum, Golgi body, vacuole, Chloroplast Mitochondria Prokaryote, Eukaryote  Classification Archaeobacteria Eubacteria Animalia Plantae, Protista Binomial, Fungi Monerans Bacteria Nomenclature	Ch. 7	September 1-2	October	

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	Virus, genus Species, kingdom				
<p>5. Identify cells, tissues, organs, organ systems, organisms, populations, communities, and ecosystems as levels of organization in the biosphere.</p> <ul style="list-style-type: none"> <li>Identify the levels of organization in the biosphere including cells, tissues, organs, and organ systems, as well as organisms, populations, communities, and ecosystems.</li> </ul>	Cells, tissue, organs Organ systems Organisms Population Biological community Ecosystem Niche Biotic factors Abiotic factors Habitat Biosphere	Ch. 3	January	February	
<b>Objectives and Eligible Content</b>	<b>Vocabulary</b>	<b>Resources</b>	<b>Date to be taught</b>	<b>Date Tested</b>	<b>% Mastery</b>
<p>6. Describe the roles of mitotic and meiotic divisions during reproduction, growth, and repair of cells.</p> <ul style="list-style-type: none"> <li>Demonstrate an understanding of how meiosis leads to variation.</li> <li>Describe the role of meiosis in producing variation.</li> <li>Describe the role of meiosis in reproduction.</li> <li>Describe the role of mitosis in cell repair.</li> <li>Describe the role of mitosis in growth.</li> <li>Describe the role of both mitosis and meiosis.</li> </ul>	Mitosis, meiosis Sexual reproduction Growth, diploid Haploid, egg Sperm, Chromosome Nondisjunction Crossing over Interphase Cytokinesis Homologous	Cellsalve.com Ch. 10	October	October	
<p>7. Apply Mendel's laws to determine phenotypic and genotypic probabilities of offspring.</p> <ul style="list-style-type: none"> <li>Use Punnett squares to determine phenotypic and genotypic percentages.</li> <li>Recognize dominant and recessive alleles and their roles in determining the phenotypes of offspring.</li> <li>Compare the terms heterozygous and homozygous, and demonstrate an understanding of how these terms relate to phenotypes and genotypes of offspring.</li> </ul>	Mendel Phenotype, Genotype Ratios, offspring Heterozygous Homozygous Segregation Independent assortment, trait Punnett squares Dihybrid cross Monohybrid cross Dominant, allele recessive	Ch. 11	October	October	

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Objectives and Eligible Content	Vocabulary	Resources	Date Introduced	Date Tested	% Mastery
<p><b>8.</b> Identify the structure and function of DNA, RNA, and protein.</p> <ul style="list-style-type: none"> <li>• Recognize that amino acids make up protein.</li> <li>• Recognize that proteins can function as enzymes.</li> <li>• Compare the functions of DNA and RNA in the production of protein.</li> <li>• Identify patterns of base pairing of DNA and RNA.</li> <li>• Recognize DNA as making up genes and chromosomes.</li> </ul>	DNA, RNA Amino acids Proteins Nitrogen bases Nucleotides, sugars Phosphate, genes Chromosomes Enzymes, adenine Guanine, cytosine Thymine Uracil, mutation	Ch. 12	November	December	
<p><b>10.</b> Distinguish between monocots and dicots, angiosperms and gymnosperms, and vascular and nonvascular plants.</p> <ul style="list-style-type: none"> <li>• Demonstrate knowledge of structures and reproduction, identify the differences in venation patterns, and demonstrate knowledge about the significance of the number of cotyledons.</li> <li>• Distinguish between monocots and dicots.</li> <li>• Distinguish between angiosperms and gymnosperms.</li> <li>• Distinguish between vascular and nonvascular plants.</li> </ul>	Monocot, dicot Angiosperm Gymnosperm, cone Vascular Nonvascular, plant Roots, stems Leaves, venation Cotyledons, flowers Chemical and Physical adaptations for plants, Spines needles	Ch. 22, 24	March		
Objectives and Eligible Content	Vocabulary	Resources	Date Introduced	Date Tested	% Mastery
<p><b>11.</b> Classify animals according to type of skeletal structure, method of fertilization and reproduction, body symmetry, body coverings, and locomotion.</p> <ul style="list-style-type: none"> <li>• Compare invertebrates and vertebrates.</li> <li>• Compare endoskeletons and exoskeletons.</li> <li>• Compare internal and external fertilization.</li> <li>• Compare sexual and asexual reproduction.</li> <li>• Compare bilateral and radial symmetry.</li> <li>• Classify animals according to type of skeletal structure.</li> <li>• Classify animals according to method of fertilization and</li> </ul>	Invertebrate Invertebrate Endoskeleton Exoskeleton Internal fertilization External fertilization Sexual reproduction Asexual reproduction Bilateral symmetry Radial symmetry Coelomates Acoelomates Pseudocoelomates	Ch. 26.1, 30	November (end)	December	

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<p>reproduction.</p> <ul style="list-style-type: none"> <li>Classify animals according to type of body symmetry.</li> <li>Classify animals according to type of body coverings.</li> <li>Classify animals according to type of locomotion.</li> <li>Classify animals according to multiple physical characteristics.</li> </ul>	Filter feeder Protostome Deuterostome Regeneration Hermaphrodite Parthenogenesis Metamorphosis Notochord Dorsal hollow nerve chord, Spawning Ectotherm Endotherm				
<b>Objectives and Eligible Content</b>	<b>Vocabulary</b>	<b>Resources</b>	<b>Date Introduced</b>	<b>Date Tested</b>	<b>% Mastery</b>
<p><b>12.</b> Describe protective adaptations of animals, including mimicry, camouflage, beak type, migration, and hibernation.</p> <ul style="list-style-type: none"> <li>Recognize and apply the definition of mimicry. (The resemblance of one organism to another or to an object in its surroundings for concealment and protection from predators.)</li> <li>Recognize and apply the definition of camouflage. (The method or result of concealing by disguise or protective coloration such that the organism appears to be part of the natural surroundings.)</li> <li>Distinguish between different beak types, and identify what each type is used for.</li> <li>Recognize and apply the definition of migration. (The process of changing location periodically, especially by moving seasonally from one region to another.)</li> <li>Recognize and apply the definition of hibernation. (The process of passing winter in an inactive or dormant state.)</li> </ul>	Adaptation Mimicry Aggressive mimicry Camouflage Resemblance Protective resemblance Migration Hibernation Structural adaptation Behavioral adaptation Prey Predators Beak type Dormant	Ch. 34	November	December	
<b>Objectives and Eligible Content</b>	<b>Vocabulary</b>	<b>Resources</b>	<b>Date Introduced</b>	<b>Date Tested</b>	<b>% Mastery</b>
<p><b>13.</b> Trace the flow of energy as it decreases through the trophic levels from producers to the quaternary level in food chains, food webs,</p>	Autotroph, Producer Heterotroph, Consumer 1 <sup>st</sup> order heterotroph	Ch. 3	December	December	

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<p>and energy pyramids.</p> <ul style="list-style-type: none"> <li>Trace the flow of energy through food chains, food webs, and energy pyramids.</li> </ul>	<p>(Primary consumers) 2<sup>nd</sup> order heterotroph (secondary) 3<sup>rd</sup> order heterotroph (tertiary) 4<sup>th</sup> order consumers (quaternary) Food chain, Food web Trophic levels Decomposers Scavengers Herbivores, Ecosystem Population, Organism Biological community Carnivores, Omnivores Energy pyramid Abiotic factor, Biotic factor</p>				
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Objectives and Eligible Content	Vocabulary	Resources	Date Introduced	Date Tested	% Mastery
<p><b>14.</b> Trace biogeochemical cycles through the environment, including water, carbon, oxygen, and nitrogen.</p> <ul style="list-style-type: none"> <li>Demonstrate an understanding of the water cycle.</li> <li>Describe all events of the water cycle.</li> <li>Demonstrate an understanding of the carbon cycle.</li> <li>Describe all events of the carbon cycle.</li> <li>Demonstrate an understanding of the oxygen cycle.</li> <li>Describe all events of the oxygen cycle.</li> <li>Demonstrate an understanding of the nitrogen cycle.</li> <li>Describe all events of the nitrogen cycle.</li> </ul>	<p>Precipitation Transpiration Condensation Evaporation Runoff, Ground water Respiration, Atmosphere Photosynthesis Combustion, Fossil fuels Convert, decay Carbon dioxide, Nitrogen</p>	Ch. 3	February	March	
<p><b>15.</b> Identify biomes based on environmental factors and native organisms.</p> <ul style="list-style-type: none"> <li>Identify terrestrial biomes including the tundra, desert, rainforest, grassland, taiga (coniferous forest), and the temperate deciduous forest.</li> </ul>	<p>Terrestrial, Aquatic, tundra Desert, rainforest Grassland, taiga, Coniferous, canopy</p>	Ch. 4	February	March	

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<ul style="list-style-type: none"> <li>Identify the aquatic biomes including freshwater and marine.</li> <li>Identify terrestrial and aquatic biomes based on the rainfall and temperature characteristics.</li> </ul>	Temperate, marine Deciduous forest Plankton, estuary Intertidal zones, Range, photic zone, Aphotic zone				
Objectives and Eligible Content	Vocabulary	Resources	Date Introduced	Date Tested	% Mastery
16. Identify density-dependent and density-independent limiting factors that affect populations in an ecosystem. <ul style="list-style-type: none"> <li>Identify the limiting factors that affect populations in an ecosystem as either density-dependent or density-independent including natural disasters, space, food, water, air, abiotic and biotic factors, human activity, disease, and succession.</li> </ul>	Limiting factors Abiotic Biotic Density-dependent Density-independent Population density Succession	Ch. 5	February	March	