STAAR CONNECTION™

Diagnostic Series™

Biology

EOC

teacher

(revised for streamlined TEKS)

KAMICO®
Instructional Media, Inc.

STAAR CONNECTION™

EOC
Biology
teacher

Diagnostic Series™

XXIX/i/MMXXII

Version 2

(revised for streamlined TEKS)

KAMICO®

Instructional Media, Inc.

KAMICO® Instructional Media, Inc.
P.O. Box 1143
Salado, Texas 76571
Telephone: 254.947.7283 Fax: 254.947.7284
E-mail: kmichael@kamico.com Website: www.kamico.com

KAMICO® Instructional Media, Inc.
STAAR CONNECTION™
Introduction

KAMICO® Instructional Media's program is validated by scientifically based research. **STAAR CONNECTION™ Diagnostic Series™** and **Developmental Series™** can be used in tandem to ensure mastery of Texas reporting categories and TEKS. The *Diagnostic Series™* consists of a bank of assessments. Each assessment covers a mixture of reporting categories and TEKS. This research-based format provides continual reinforcement for and ensures retention of mastered concepts. To take full advantage of this series, administer an assessment to students. After they have completed the assessment, use it as an instructional tool. Go over each item with the class, discussing all correct and incorrect answers. Then, use the assessment as a diagnostic tool to determine a standard for which students need remediation. Find that standard in the *Developmental Series™*.

Each book in the *STAAR CONNECTION Developmental Series™* consists of isolated activities and assessments to allow for the development of specific TEKS. For every TEKS, there is at least one individual or group activity. The activities provide a fun, challenging, yet nonthreatening, way to develop mastery of the TEKS. In addition to these activities, each *Developmental Series™* book has assessments on isolated standards to be used to identify mastery or the need for further skill development or reinforcement. Continue to alternate between the *STAAR CONNECTION™ Diagnostic Series™* and the *Developmental Series™*.

KAMICO's **DATA CONNECTION®** software prints student answer sheets on plain paper using a standard laser printer, scans answer sheets using a TWAIN-compliant scanner, scores assessments, and disaggregates student academic data, showing which goals and objectives are mastered and which goals and objectives are in need of reinforcement. The software is preprogrammed to work with all KAMICO® assessments. It is easily customized to work with other instructional materials and assessments as well as teacher-, school-, district-, or state-created assessments. DATA CONNECTION® analyzes academic data from individual students, classes, grade levels, and demographic groups. Reports are presented in tabular and graphic form. Item analysis is provided to help determine the most effective method of instruction.

KAMICO® Instructional Media, Inc., supports efforts to ensure adequate yearly progress and eliminate surprises in high-stakes test results.

KAMICO® Instructional Media, Inc.
P.O. Box 1143
Salado, Texas 76571
Telephone: 254.947.7283 Fax: 254.947.7284
E-mail: kmichael@kamico.com Website: www.kamico.com

KAMICO® Instructional Media, Inc.
STAAR CONNECTION™
Diagnostic Series™
EOC Biology
Table of Contents

Reporting Categories and Related TEKS 7

Assessment 1 15
Assessment 2 24
Assessment 3 32
Assessment 4 40
Assessment 5 47
Assessment 6 55
Assessment 7 64
Assessment 8 72
Assessment 9 80
Assessment 10 87
Assessment 11 96
Assessment 12 104
Assessment 13 111
Assessment 14 120
Assessment 15 128

Answer Key 138
Student Bubble Answer Sheet 148
Bubble Answer Key 151

TEKS Alignment Chart 154
Student Progress Chart 162

Letter to Parents 163
Test-Taking Tips 164
Strategies for Reducing Your Students' Test Anxiety 165

KAMICO Product Information 166

State of Texas Assessment of Academic Readiness
End-of-Course Biology Assessment
Eligible Texas Essential Knowledge and Skills

Reporting Category 1:
Cell Structure and Function

The student will demonstrate an understanding of biomolecules as building blocks of cells, and that cells are the basic unit of structure and function of living things.

(B.4) **Science concepts.** The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. The student is expected to

(A) compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity; ***Supporting Standard***

(B) investigate and explain cellular processes, including homeostasis and transport of molecules; and ***Readiness Standard***

(C) compare the structures of viruses to cells, describe viral reproduction, and describe the role of viruses in causing diseases such as human immunodeficiency virus (HIV) and influenza. ***Readiness Standard***

(B.5) **Science concepts.** The student knows how an organism grows and the importance of cell differentiation. The student is expected to

(A) describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms; ***Readiness Standard***

(B) describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation; and ***Supporting Standard***

(C) recognize that disruptions of the cell cycle lead to diseases such as cancer. ***Supporting Standard***

(B.9) **Science concepts.** The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. The student is expected to

(A) compare the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids. ***Readiness Standard***

Reporting Category 2: Mechanisms of Genetics

The student will demonstrate an understanding of the mechanisms of genetics.

(B.6) **Science concepts.** The student knows the mechanisms of genetics such as the role of nucleic acids and the principles of Mendelian and non-Mendelian genetics. The student is expected to

(A) identify components of DNA, identify how information for specifying the traits of an organism is carried in the DNA, and examine scientific explanations for the origin of DNA; ***Readiness Standard***

(B) recognize that components that make up the genetic code are common to all organisms; ***Supporting Standard***

(C) explain the purpose and process of transcription and translation using models of DNA and RNA; ***Supporting Standard***

(D) recognize that gene expression is a regulated process; ***Supporting Standard***

(E) identify and illustrate changes in DNA and evaluate the significance of these changes; ***Readiness Standard***

(F) predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses, and non-Mendelian inheritance; *and* ***Readiness Standard***

(G) recognize the significance of meiosis to sexual reproduction. ***Supporting Standard***

Reporting Category 3:
Biological Evolution and Classification

The student will demonstrate an understanding of the theory of biological evolution and the hierarchical classification of organisms.

(B.7) **Science concepts.** The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. The student is expected to

(A) analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental; ***Readiness Standard***

(B) examine scientific explanations of abrupt appearance and stasis in the fossil record; ***Supporting Standard***

(C) analyze and evaluate how natural selection produces change in populations, not individuals; ***Supporting Standard***

(D) analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success; ***Supporting Standard***

(E) analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species; and ***Readiness Standard***

(F) analyze other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination. ***Supporting Standard***

(B.8) **Science concepts.** The student knows that taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made. The student is expected to

(A) define taxonomy and recognize the importance of a standardized taxonomic system to the scientific community; ***Supporting Standard***

(B) categorize organisms using a hierarchical classification system based on similarities and differences shared among groups; and ***Readiness Standard***

(C) compare characteristics of taxonomic groups, including archaea, bacteria, protists, fungi, plants, and animals. ***Supporting Standard***

Reporting Category 4:
Biological Processes and Systems

The student will demonstrate an understanding of metabolic processes, energy conversions, and interactions and functions of systems in organisms.

(B.9) **Science concepts.** The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. The student is expected to

(B) compare the reactants and products of photosynthesis and cellular respiration in terms of energy, energy conversions, and matter; and ***Supporting Standard***

(C) identify and investigate the role of enzymes. ***Supporting Standard***

(B.10) **Science concepts.** The student knows that biological systems are composed of multiple levels. The student is expected to

(A) describe the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals; ***Readiness Standard***

(B) describe the interactions that occur among systems that perform the functions of transport, reproduction, and response in plants; and ***Readiness Standard***

(C) analyze the levels of organization in biological systems and relate the levels to each other and to the whole system. ***Supporting Standard***

Reporting Category 5:
Interdependence within Environmental Systems

The student will demonstrate an understanding of the interdependence and interactions that occur within an environmental system and their significance.

(B.11) **Science concepts.** The student knows that biological systems work to achieve and maintain balance. The student is expected to

(A) summarize the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems; and ***Supporting Standard***

(B) describe how events and processes that occur during ecological succession can change populations and species diversity. ***Readiness Standard***

(B.12) **Science concepts.** The student knows that interdependence and interactions occur within an environmental system. The student is expected to

(A) interpret relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms; ***Readiness Standard***

(B) compare variations and adaptations of organisms in different ecosystems; ***Supporting Standard***

(C) analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids; ***Readiness Standard***

(D) describe the flow of matter through the carbon and nitrogen cycles and explain the consequences of disrupting these cycles; and ***Supporting Standard***

(E) describe how environmental change can impact ecosystem stability. ***Readiness Standard***

Scientific Process Skills

These skills will not be listed under a separate reporting category. Instead, they will be incorporated into at least 40% of the test questions from reporting categories 1-5 and will be identified along with content standards.

(B.1) **Scientific processes.** The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to

(A) demonstrate safe practices during laboratory and field investigations; and

(B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.

(B.2) **Scientific processes.** The student uses scientific practices and equipment during laboratory and field investigations. The student is expected to

(A) know the definition of science and understand that it has limitations, as specified in chapter 112.34, subsection (b)(2) of 19 TAC;

(B) know that 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;

(C) know 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;

(D) distinguish between scientific hypotheses and scientific theories;

(E) plan and implement descriptive, comparative, and experimental investigations, including asking questions, formulating testable hypotheses, and selecting equipment and technology;

(F) collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as data-collecting probes, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, balances, gel electrophoresis apparatuses, micropipettes, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures;

(G) analyze, evaluate, make inferences, and predict trends from data; and

(H) communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.

(B.3) **Scientific processes.** The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to

(A) analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student;

(B) communicate and apply scientific information extracted from various sources such as current events, published journal articles, and marketing materials;

(C) draw inferences based on data related to promotional materials for products and services;

(D) evaluate the impact of scientific research on society and the environment;

(E) evaluate models according to their limitations in representing biological objects or events; and

(F) research and describe the history of biology and contributions of scientists.

Name _____ Date _____

1 A biology student wears protective gloves as he studies a bacterium cell under a microscope. Using the microscope, what observation does the student make that allows him to correctly classify the bacterium cell?

A The student observes that the bacterium cell is a single-celled organism, and therefore, the bacterium is a eukaryote.

B The student observes that the bacterium cell does not have a cell membrane, and therefore, the bacterium is a prokaryote.

C The student observes that the bacterium cell cannot reproduce, and therefore, the bacterium is a eukaryote.

D The student observes that the bacterium cell does not contain a nucleus, and therefore, the bacterium is a prokaryote.

2 Which biomolecule is used by organisms to store and transmit cellular information?

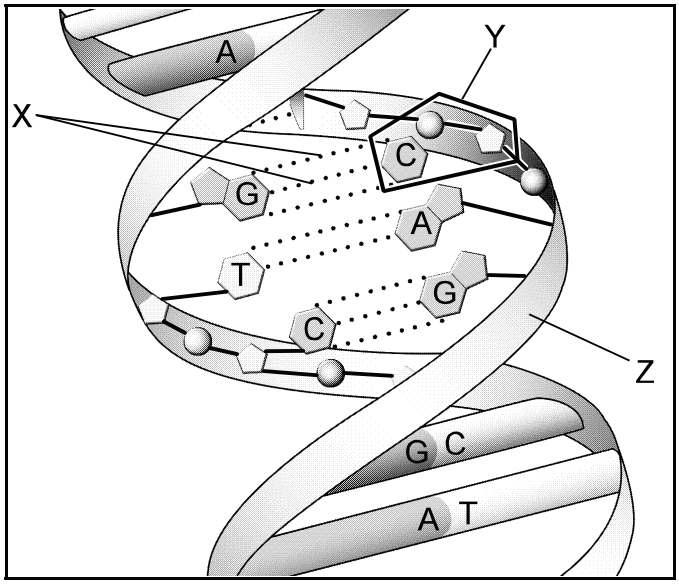
F lipid

G protein

H carbohydrate

J nucleic acid

3 Study the diagram of a section of DNA.



Which labels correctly identify the components of DNA?

A X — hydrogen bond, Y — nucleotide, Z — sugar-phosphate base

B X — nucleotide, Y — hydrogen bond, Z — sugar-phosphate base

C X — nucleotide, Y — sugar-phosphate base, Y — hydrogen bond

D X — sugar-phosphate bond, Y — nucleotide, Z — hydrogen bond

4 DNA fingerprinting is a technique in which sequences of bases in DNA unique to an individual organism are discovered and then compared to other DNA sequences from a different organism of the same species. Which of the following situations might take advantage of the ability to identify DNA sequences using DNA fingerprinting?

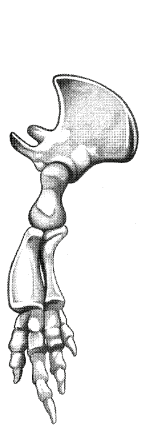
F Police try to match a suspect with a drop of blood found at a crime scene.

G A doctor tests blood from a patient to see if her white blood cell count suggests that she has a bacterial infection.

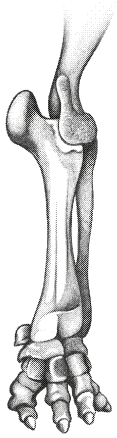
H A woman undergoes drug testing when she applies for a job at a research laboratory.

J A plant breeder infects a hybrid corn plant with a virus to test the plant's resistance to the disease.

5 A biologist reads an article in a scientific journal that describes how the legs of different organisms look and function differently, but appear to be constructed from the same basic bones. He compares a drawing of the skeletal structure of a porpoise's fin with one of an elephant's leg.



Porpoise fin



Elephant leg

What aspect of the theory of evolution do these drawings support?

A The structures of these organisms are homologous, providing evidence that they descended from a common ancient ancestor.

B The two organisms have the same DNA, giving evidence that they originated from the same species.

C The similarity between the two organisms in the structures supports the theory that random occurrences in nature cause organisms to evolve.

D The similarity between the two organisms in the structures provides evidence that porpoises will eventually evolve into elephants.

6 When genes are transferred from one population to another, evolution occurs. For example, if all red-haired people were to leave Ireland, the following generation would probably have fewer red-haired people. Which type of mechanism results in evolutionary change due to the transfer of genes from one population to another?

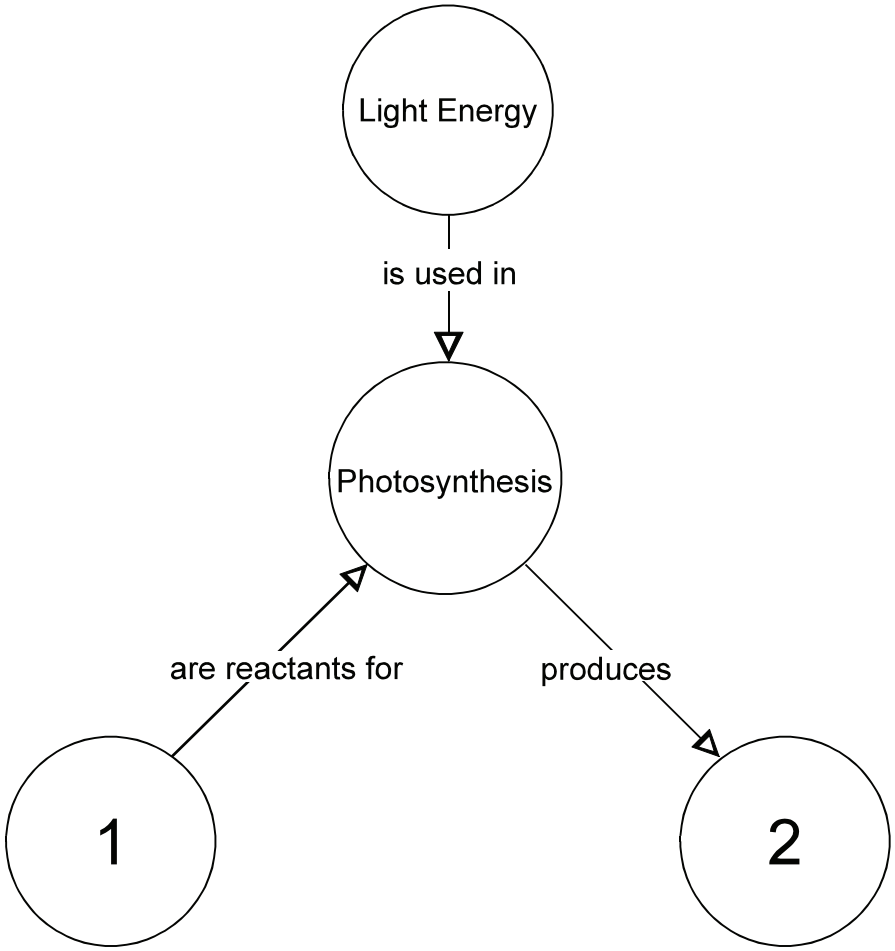
F genetic drift

G gene flow

H gene therapy

J gene mutation

7 Look at the incomplete concept map that outlines the energy flow in photosynthesis.



Which reactants and products belong in the empty spaces labeled "1" and "2"?

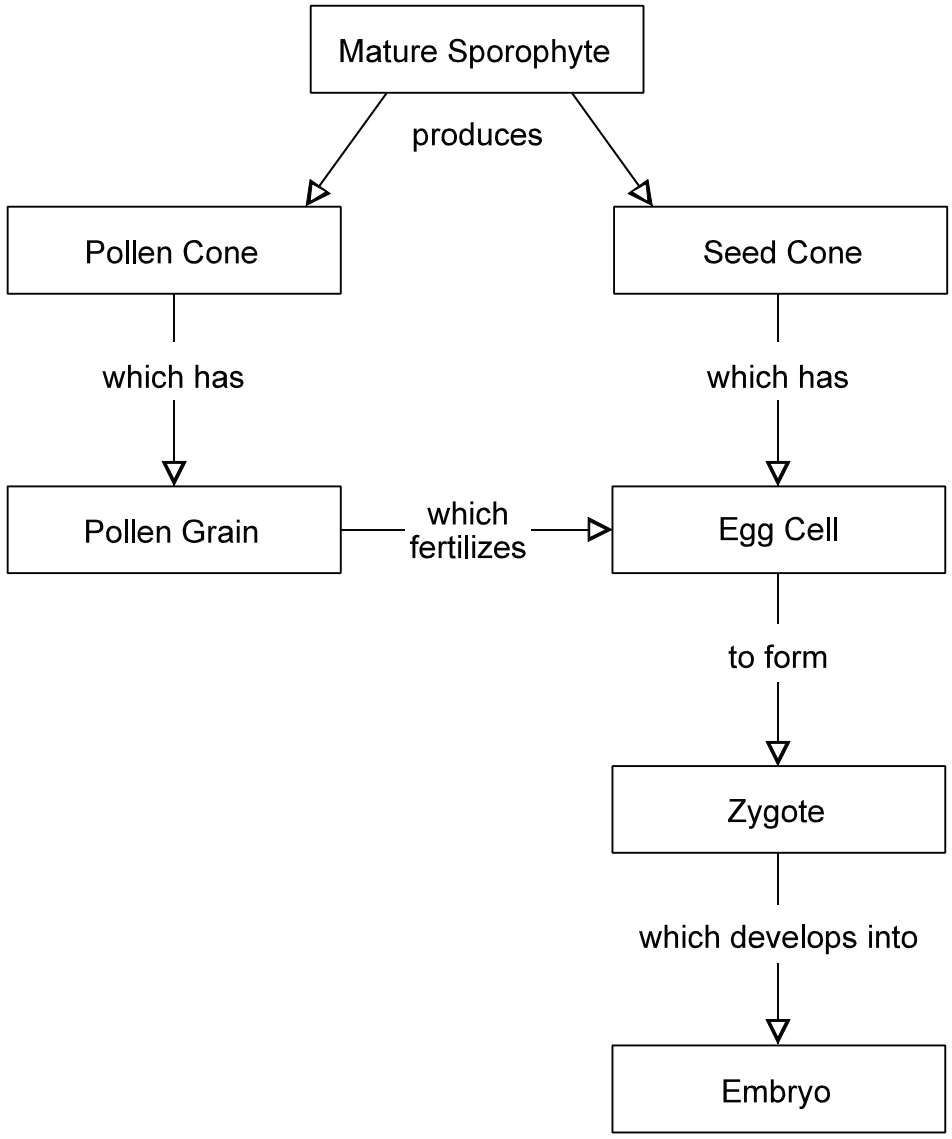
A "1" — Carbon and Oxygen; "2" — Hydrogen and Nitrogen

B "1" — Carbon Dioxide and Water; "2" — Sugars and Oxygen

C "1" — Sugars and Water; "2" — Carbon Dioxide and Oxygen

D "1" — Carbon Dioxide and Sugars; "2" — Oxygen and Water

8 Look at the flowchart showing the reproductive cycle of a plant.



Which type of plant's reproductive cycle does this flowchart represent?

F gymnosperms

G endosperms

H angiosperms

J bryophytes

9 Hydrilla is an invasive aquatic weed that forms thick mats on the water surface in the absence of natural enemies. The fast-growing weed takes away habitat from other aquatic plants and open-water inhabiting organisms. Thick mats on the water surface reduce the amount of sunlight reaching plants in deeper water, reducing their ability to photosynthesize.

What is the most likely response of the aquatic community to the invasion of hydrilla in their aquatic environment?

A An overgrowth of hydrilla would introduce a new food source, resulting in increasing the diversity of different organisms and plants and their populations that live in the aquatic environment.

B An overgrowth of hydrilla would deplete the amount of dissolved oxygen in the water, resulting in the death of large populations of aquatic organisms and plants.

C An overgrowth of hydrilla would not change the organisms in the aquatic community because the organisms will reclaim their original habitats by killing the hydrilla.

D An overgrowth of hydrilla would result in fewer numbers of organisms in populations because the organisms would be eaten by more land-based organisms that move to the aquatic community.

10 Pandas depend on bamboo for food. The pandas' bamboo source grows only in certain temperate forests in China. Many of these forests have been cleared for timber and farmland. As a result, the population of pandas in the world is declining.

Which of the following adaptations would most likely evolve in order to allow the species to survive?

F In order to escape predators, pandas evolve to have different coloring in their coats.

G In order to require less food, pandas evolve to need a longer hibernation period.

H In order to increase the panda population, pandas evolve to have larger litters of babies.

J In order to increase their supply of food, pandas evolve to include other sources of food in their diet.

STAAR CONNECTION™
Diagnostic Series™ EOC Biology
TEKS Alignment Chart

For each grade or course, TEA has identified some of the TEKS eligible to be assessed on STAAR as readiness standards. These readiness standards will be emphasized on the STAAR assessments. The remaining TEKS eligible to be assessed on STAAR are considered supporting standards. Although supporting standards will be assessed, they will not be emphasized on STAAR. KAMICO® has shown whether each question assessed in this book is aligned to a readiness standard or a supporting standard.

Readiness standards

- are essential for success in the current grade or course,
- are important for preparedness for the next grade or course,
- support college and career readiness,
- necessitate in-depth instruction, and
- address broad and deep ideas.

Supporting standards, although introduced in the current grade or course,

- may be emphasized in a subsequent year,
- may be emphasized in a previous year,
- play a role in preparing students for the next grade or course but not a central role, and
- address more narrowly defined ideas.

Assessment 1					
Question Number	**Answer**	**Reporting Category**	**TEKS**	**Process Skill**	**Supporting or Readiness**
1	D	1	B.4A	B.1A, B.2F	Supporting
2	J	1	B.9A		Readiness
3	A	2	B.6A	B.2H	Readiness
4	F	2	B.6A	B.3D	Supporting
5	A	3	B.7A	B.2C, B.3B	Readiness
6	G	3	B.7F		Supporting
7	B	4	B.9B	B.2H	Supporting
8	F	4	B.10B	B.2H	Readiness
9	B	5	B.12A	B.2G	Supporting
10	J	5	B.11B	B.2G	Supporting