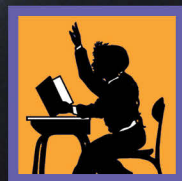


# STAAR CONNECTION™ Diagnostic Series™

Science  
**8**  
teacher

**(revised for streamlined TEKS)**



**KAMICO®**  
**Instructional Media, Inc.**

# STAAR CONNECTION™

Science  
**8**  
teacher

## Diagnostic Series™

XXIX/i/MMXXII

Version 2

**(revised for streamlined TEKS)**



**KAMICO®**

Instructional Media, Inc.

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KAMICO® Instructional Media, Inc.

P.O. Box 1143

Salado, Texas 76571

Telephone: 254.947.7283 Fax: 254.947.7284

E-mail: [kmichael@kamico.com](mailto:kmichael@kamico.com) Website: <https://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.

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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: <https://www.kamico.com>

**KAMICO® Instructional Media, Inc.**  
**STAAR CONNECTION™**  
**Diagnostic Series™**  
**Grade 8 Science**  
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**NOTE:**

TEA advises that the Scientific Investigation and Reasoning Skills "will be incorporated into at least 40% of the test questions in reporting categories 1-4 and will be identified along with content standards." KAMICO® has followed these guidelines. However, to ensure thorough coverage of the Scientific Investigation and Reasoning Skills, KAMICO® writers have included extra questions over just those skills to ensure student mastery.

**State of Texas Assessments of Academic Readiness  
Grade 8 Science Assessment  
Eligible Texas Essential Knowledge and Skills**

**Reporting Category 1:  
Matter and Energy**

**The student will demonstrate an understanding of the properties of matter and energy and their interactions.**

**Grade 8**

- (8.5) **Matter and energy.** The student knows that matter is composed of atoms and has chemical and physical properties. The student is expected to
- (A) describe the structure of atoms, including the masses, electrical charges, and locations, of protons and neutrons in the nucleus and electrons in the electron cloud; ***Readiness Standard***
  - (B) identify that protons determine an element's identity and valence electrons determine its chemical properties, including reactivity; ***Readiness Standard***
  - (C) interpret the arrangement of the Periodic Table, including groups and periods, to explain how properties are used to classify elements; ***Readiness Standard***
  - (D) recognize that chemical formulas are used to identify substances and determine the number of atoms of each element in chemical formulas containing subscripts; ***Readiness Standard***
  - (E) investigate how evidence of chemical reactions indicates that new substances with different properties are formed and how that relates to the law of conservation of mass. ***Readiness Standard***

## Grade 7

(7.5) **Matter and energy.** The student knows that interactions occur between matter and energy. The student is expected to

(B) diagram the flow of energy through living systems, including food chains, food webs, and energy pyramids. ***Supporting Standard***

(7.6) **Matter and energy.** The student knows that matter has physical and chemical properties and can undergo physical and chemical changes. The student is expected to

distinguish between physical and chemical changes in matter.  
***Supporting Standard***

## Grade 6

(6.6) **Matter and energy.** The student knows matter has physical properties that can be used for classification. The student is expected to

(A) compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability;

***Supporting Standard***

(B) calculate density to identify an unknown substance.

***Supporting Standard***

## Reporting Category 2: Force, Motion, and Energy

The student will demonstrate an understanding of force, motion, and energy and their relationships.

### Grade 8

- (8.6) **Force, motion, and energy.** The student knows that there is a relationship between force, motion, and energy. The student is expected to
- (A) demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion; **Readiness Standard**
  - (B) differentiate between speed, velocity, and acceleration; **Supporting Standard**
  - (C) investigate and describe applications of Newton's three laws of motion such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches. **Readiness Standard**

### Grade 6

- (6.8) Force, motion, and energy. The student knows force and motion are related to potential and kinetic energy. The student is expected to
- (A) compare and contrast potential and kinetic energy; **Supporting Standard**
  - (C) calculate average speed using distance and time measurements; **Supporting Standard**
  - (D) measure and graph changes in motion. **Supporting Standard**
- (6.9) **Force, motion, and energy.** The student knows that the Law of Conservation of Energy states that energy can neither be created nor destroyed, it just changes form. The student is expected to
- (C) demonstrate energy transformations such as energy in a flashlight battery changes from chemical energy to electrical energy to light energy. **Supporting Standard**



**Reporting Category 3:  
Earth and Space**

**The student will demonstrate an understanding of components, cycles, patterns, and natural events of Earth and space systems.**

**Grade 8**

- (8.7) **Earth and space.** The student knows the effects resulting from cyclical movements of the Sun, Earth, and Moon. The student is expected to
- (A) model and illustrate how the tilted Earth rotates on its axis, causing day and night, and revolves around the Sun, causing changes in seasons; ***Readiness Standard***
  - (B) demonstrate and predict the sequence of events in the lunar cycle; ***Readiness Standard***
  - (C) relate the positions of the Moon and Sun to their effect on ocean tides. ***Supporting Standard***
- (8.8) **Earth and space.** The student knows characteristics of the universe. The student is expected to
- (A) describe components of the universe, including stars, nebulae, and galaxies, and use models such as the Hertzsprung-Russell diagram for classification; ***Readiness Standard***
  - (B) recognize that the Sun is a medium-sized star located in a spiral arm of the Milky Way galaxy and that the Sun is many thousands of times closer to Earth than any other star; ***Supporting Standard***
  - (C) identify how different wavelengths of the electromagnetic spectrum such as visible light and radio waves are used to gain information about components in the universe. ***Supporting Standard***

- (8.9) **Earth and space.** The student knows that natural events can impact Earth systems. The student is expected to
- (A) describe the historical development of evidence that supports plate tectonic theory; **Supporting Standard**
  - (B) relate plate tectonics to the formation of crustal features; **Readiness Standard**
  - (C) interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering. **Readiness Standard**
- (8.10) **Earth and space.** The student knows that climatic interactions exist among Earth, ocean, and weather systems. The student is expected to
- (A) recognize that the Sun provides the energy that drives convection within the atmosphere and oceans, producing winds; **Supporting Standard**
  - (B) identify how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressures and fronts; **Supporting Standard**
  - (C) identify the role of the oceans in the formation of weather systems such as hurricanes. **Supporting Standard**

### **Grade 7**

- (7.8) **Earth and space.** The student knows that natural events and human activity can impact Earth systems. The student is expected to
- (C) model the effects of human activity on groundwater and surface water in a watershed. **Supporting Standard**

### **Grade 6**

- (6.11) **Earth and space.** The student understands the organization of our solar system and the relationships among the various bodies that comprise it. The student is expected to
- (B) understand that gravity is the force that governs the motion of our solar system. **Supporting Standard**

## Reporting Category 4: Organisms and Environments

The student will demonstrate an understanding of the structures and functions of living organisms and their interdependence on each other and on their environment.

### Grade 8

- (8.11) **Organisms and environments.** The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems. The student is expected to
- (A) investigate how organisms and populations in an ecosystem depend on and may compete for biotic factors such as food and abiotic factors such as quantity of light, water, range of temperatures, or soil composition; ***Readiness Standard***
  - (B) explore how short- and long-term environmental changes affect organisms and traits in subsequent populations; ***Readiness Standard***
  - (C) recognize human dependence on ocean systems and explain how human activities such as runoff, artificial reefs, or use of resources have modified these systems. ***Supporting Standard***

### Grade 7

- (7.10) **Organisms and environments.** The student knows that there is a relationship between organisms and the environment. The student is expected to
- (B) describe how biodiversity contributes to the sustainability of an ecosystem; ***Supporting Standard***
  - (C) observe, record, and describe the role of ecological succession such as in a microhabitat of a garden with weeds. ***Supporting Standard***
- (7.11) **Organisms and environments.** The student knows that populations and species demonstrate variation and inherit many of their unique traits through gradual processes over many generations. The student is expected to
- (A) examine organisms or their structures such as insects or leaves and use dichotomous keys for identification; ***Supporting Standard***

- (C) identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground Finch (*Geospiza fortis*) or domestic animals and hybrid plants. **Supporting Standard**
- (7.12) **Organisms and environments.** The student knows that living systems at all levels of organization demonstrate the complementary nature of structure and function. The student is expected to
- (B) identify the main functions of the systems of the human organism, including the circulatory, respiratory, skeletal, muscular, digestive, excretory, reproductive, integumentary, nervous, and endocrine systems; **Supporting Standard**
- (D) differentiate between structure and function in plant and animal cell organelles, including cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast, and vacuole; **Supporting Standard**
- (F) recognize the components of cell theory. **Supporting Standard**
- (7.14) **Organisms and environments.** The student knows that reproduction is a characteristic of living organisms and that the instructions for traits are governed in the genetic material. The student is expected to
- (B) compare the results of uniform or diverse offspring from asexual or sexual reproduction; **Supporting Standard**
- (C) recognize that inherited traits of individuals are governed in the genetic material found in the genes within chromosomes in the nucleus. **Supporting Standard**

## **Grade 6**

- (6.12) **Organisms and environments.** The student knows all organisms are classified into domains and kingdoms. Organisms within these taxonomic groups share similar characteristics that allow them to interact with the living and nonliving parts of their ecosystem. The student is expected to
- (D) identify the basic characteristics of organisms, including prokaryotic or eukaryotic, unicellular or multicellular, autotrophic or heterotrophic, and mode of reproduction, that further classify them in the currently recognized kingdoms. **Supporting Standard**

## Scientific Investigation and Reasoning 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 in reporting categories 1–4 and will be identified along with content standards.

### Grade 8

- (8.1) **Scientific investigation and reasoning.** The student, for at least 40% of instructional time, will conduct laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices. The student is expected to
- (A) demonstrate safe practices during laboratory and field investigations as outlined in Texas Education Agency-approved safety standards;
  - (B) practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials.
- (8.2) **Scientific investigation and reasoning.** The student uses scientific practices during laboratory and field investigations. The student is expected to
- (A) plan and implement comparative and descriptive investigations by making observations, asking well defined questions, and using appropriate equipment and technology;
  - (B) design and implement experimental investigations by making observations, asking well defined questions, formulating testable hypotheses, and using appropriate equipment and technology;
  - (C) collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;
  - (D) construct tables and graphs, using repeated trials and means, to organize data and identify patterns;
  - (E) analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.

(8.3) **Scientific investigation and reasoning.** The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists. The student is expected to

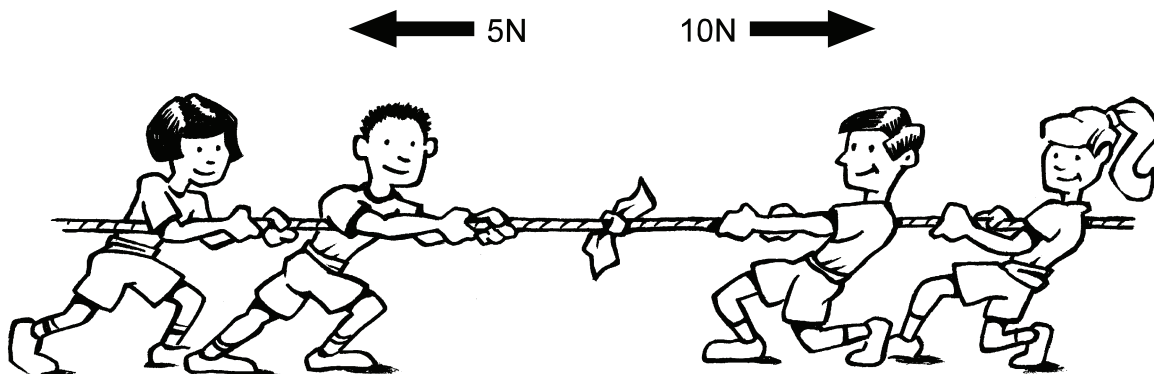
- (A) analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student;
- (B) use models to represent aspects of the natural world such as an atom, a molecule, space, or a geologic feature;
- (C) identify advantages and limitations of models such as size, scale, properties, and materials;
- (D) relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content.

(8.4) **Scientific investigation and reasoning.** The student knows how to use a variety of tools and safety equipment to conduct science inquiry. The student is expected to

- (A) use appropriate tools, including lab journals/notebooks, beakers, meter sticks, graduated cylinders, anemometers, psychrometers, hot plates, test tubes, spring scales, balances, microscopes, thermometers, calculators, computers, spectrometers, timing devices, and other necessary equipment to collect, record, and analyze information;
- (B) use preventative safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher.

Name \_\_\_\_\_ Date \_\_\_\_\_

- 1 The digestion process begins when you begin to chew food. Chewing food cuts and grinds food into smaller pieces so that it is more easily swallowed. During chewing, your mouth releases saliva which contains enzymes to turn the food into a form that can be used by cells. What type of changes take place in your mouth when you chew food?
- A physical change during the entire process of digestion in the mouth
- B chemical change during the entire process of digestion in the mouth
- C physical change when food is cut and ground and chemical change when food is mixed with saliva
- D chemical change when food is cut and ground and physical change when food is mixed with saliva
- 2 In physical education, Coach Ringo had students play a game of tug-of-war. Students pulled on a rope as shown.



What is the final force placed on the rope?

F ← 5N

H 5N →

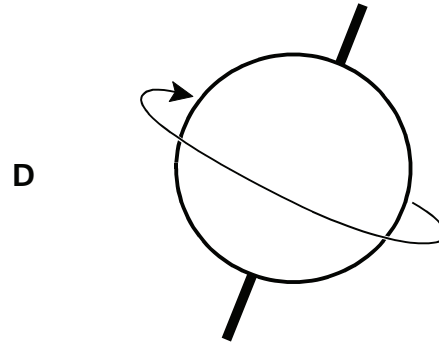
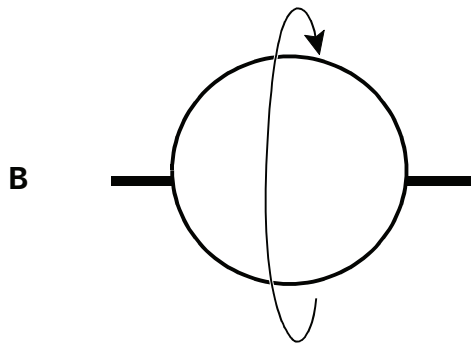
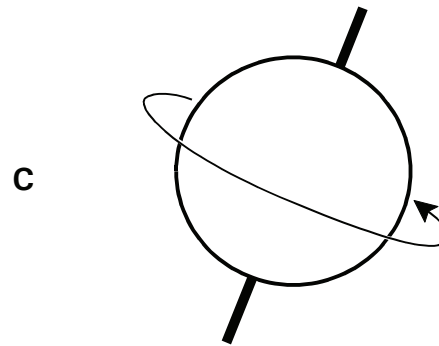
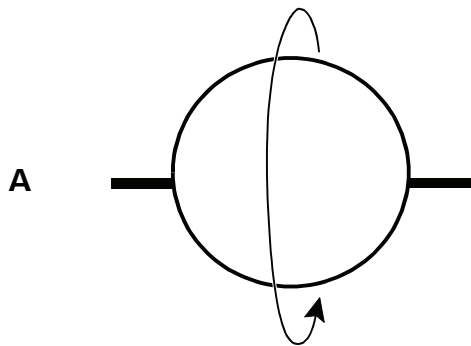
G ← 10N

J 10N →

- 3** What do unbalanced forces do to an object when they act upon the object?
- A** Unbalanced forces cause an object to maintain its state of motion.
  - B** Unbalanced forces cause the net force of an object to be zero.
  - C** Unbalanced forces cause an object to start moving, stop moving, or change directions.
  - D** Unbalanced forces cause an object to maintain the same speed and the same direction.
- 4** What is one way that kinetic energy is different from potential energy?
- F** The kinetic energy of an object depends upon the object's height above the ground, while the potential energy of an object depends upon the object's motion.
  - G** The potential energy of an object depends upon the object's height above the ground, while the kinetic energy of an object depends upon the object's motion.
  - H** The kinetic energy of an object can change, but the potential energy of an object always remains constant.
  - J** The potential energy of an object can change, but the kinetic energy of an object always remains constant.



- 5 Earth rotates on its axis, causing day and night. Which diagram illustrates Earth's rotation?



- 6 Radio waves are sometimes used by astronomers to measure distance. A radio wave pulse is transmitted from Earth to an object in space. The pulse bounces off the object and returns to Earth in five seconds. Assume that the radio wave travels at the speed of light, which is 300,000 kilometers per second. What is the calculated distance of the object from Earth?

- F 750,000 kilometers
- G 150,000 kilometers
- H 7,500,000 kilometers
- J 1,500,000 kilometers

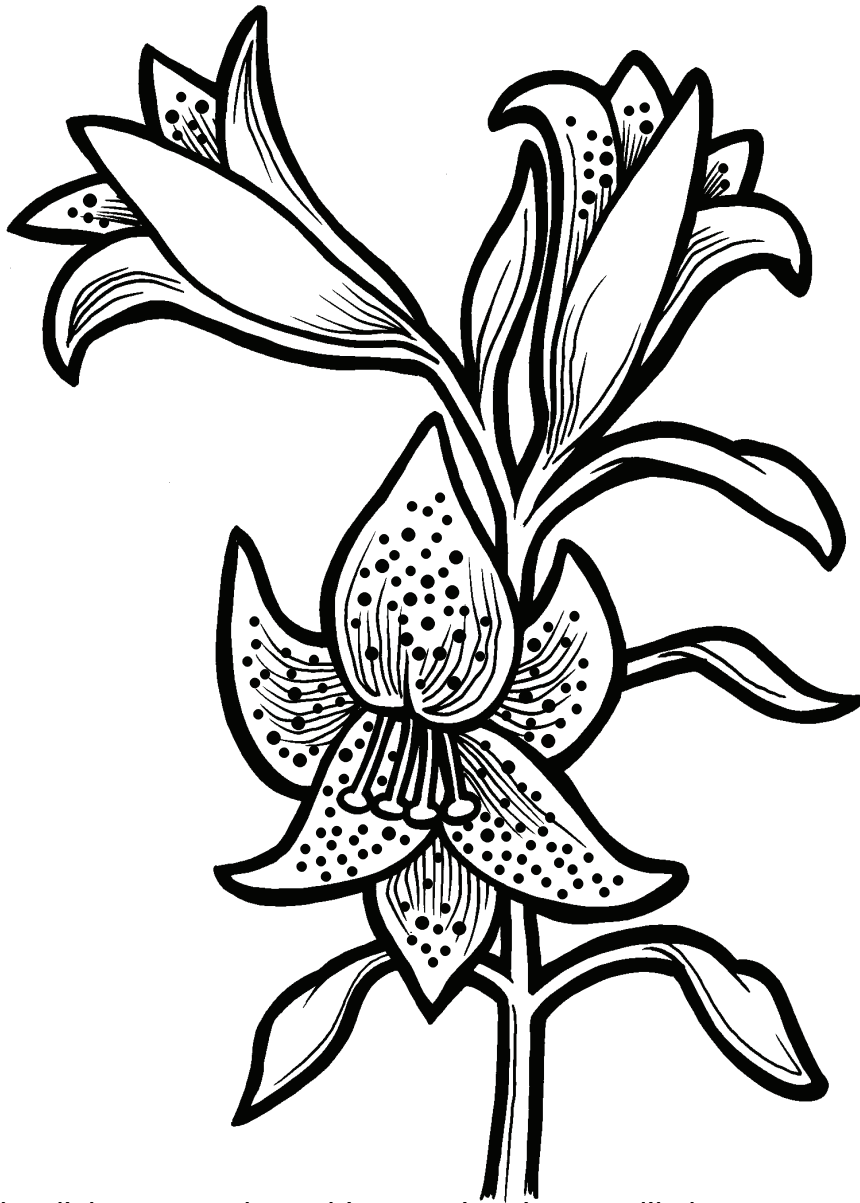
- 7 The mistletoe is a plant that grows on deciduous trees, sending thin roots into the bark of the tree. The mistletoe depends on the trees for –

- A air.
- B heat.
- C food.
- D soil.

8 Study the dichotomous key.

Number	Description	Instruction
1A 1B	Organism can be seen without a microscope. Organism cannot be seen without a microscope.	Go to 2. Go to 3.
2A 2B	Organism is a plant. Organism is an animal.	Go to 4. Go to 5.
3A 3B	Organism has cilia for movement. Organism has a flagellum for movement	PARAMECIUM EUGLENA
4A 4B	Plant has a woody stem. Plant has a green, stalk-like stem.	Go to 6. Go to 7.
5A 5B	Organism has six legs. Organism has four or fewer legs.	Go to 8. Go to 9.
6A 6B	Plant has flat, broad leaves. Plant has thin, needle-like leaves.	OAK TREE PINE TREE
7A 7B	Plant has ball-shaped cluster of white, fluffy seeds. Plant has large, spotted trumpet-shaped flowers.	DANDELION TIGER LILY
8A 8B	Organism has long body and four long wings. Organism has round, spotted body.	DRAGONFLY LADYBUG
9A 9B	Organism has feathers. Organism has fur.	Go to 10. Go to 11.
10A 10B	Organism has long, curved beak. Organism has short, pointed beak.	TOUCAN ROBIN
11A 11B	Organism has hooves and antlers. Organism has paws and spots.	Go to 12. Go to 13.
12A 12B	Antlers are straight, pointed, and narrow. Antlers are large, flat, and broad.	GAZELLE MOOSE
13A 13B	Organism has round ears and short hind legs. Organism has pointed ears and long legs.	HYENA DALMATIAN

Study the drawing of an organism that can be seen without a microscope.



Using the dichotomous key, this organism is most likely a —

- F dandelion.
- G tiger lily.
- H tulip.
- J oak tree.

- 9** Which type of investigation should be conducted under a fume hood?
- A** an investigation that requires a student to observe the behavior of a colony of ants
  - B** an investigation that requires a student to find the boiling temperature of salt water
  - C** an investigation that requires a student to find the mass of three sugar cubes
  - D** an investigation that requires a student to burn the element magnesium
- 10** A marine biologist has been studying sharks for two years. She has been using raw chicken to study their feeding behavior. Sharks seemed to like raw chicken as well as they did raw fish. One day, she threw a bucket of raw chicken in front of a swimming shark. The shark swam past the chicken and moved away from the boat. The marine biologist concluded that the shark did not feed because it was not hungry. Another marine biologist evaluated the first biologist's explanation and determined that —
- F** the scientific explanation was not sound because the marine biologist's observations lack data relating to the shark's level of hunger.
  - G** the scientific explanation was not sound because chickens are land animals and not marine creatures.
  - H** the scientific explanation was sound because the marine biologist's recorded observations show that the shark ignored the raw chicken.
  - J** the scientific explanation was sound because most organisms do not feed when they are not hungry.

**STAAR CONNECTION™**  
**Diagnostic Series™ Grade 8 Science**  
**TEKS Alignment Chart**

**NOTE:**

TEA advises that the Scientific Investigation and Reasoning Skills "will be incorporated into at least 40% of the test questions in reporting categories 1-4 and will be identified along with content standards." KAMICO® has followed these guidelines. However, to ensure thorough coverage of the Scientific Investigation and Reasoning Skills, KAMICO® writers have included extra questions over just those skills to ensure student mastery.

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**

<b>Question Number</b>	<b>Answer</b>	<b>Reporting Category</b>	<b>TEKS</b>	<b>Readiness or Supporting Standard</b>	<b>SIRS</b>
1	C	1	7.6	Supporting	
2	H	2	8.6A	Readiness	
3	C	2	8.6A	Readiness	
4	G	2	6.8A	Supporting	
5	C	3	8.7A	Readiness	8.3B
6	F	3	8.8C	Supporting	
7	C	4	8.11A	Readiness	
8	G	4	7.11A	Supporting	8.2C
9	D	SIRS	8.4B		8.1A
10	F	SIRS	8.3A		8.3A