

Standardized Assessment Tasks for
STAAR Alternate

Biology

Definitions/Examples for STAAR Reporting Category 1 Biology (5) Essence Statement A

The following definitions clarify terms used in the Biology assessment tasks to ensure that the content of the tasks is understood. When appropriate, examples and nonexamples have been provided for further clarification. These are just examples and do not represent all the appropriate ways to test the skills in the STAAR Alternate assessment tasks.

Levels 3 and 2: pages 5 and 6

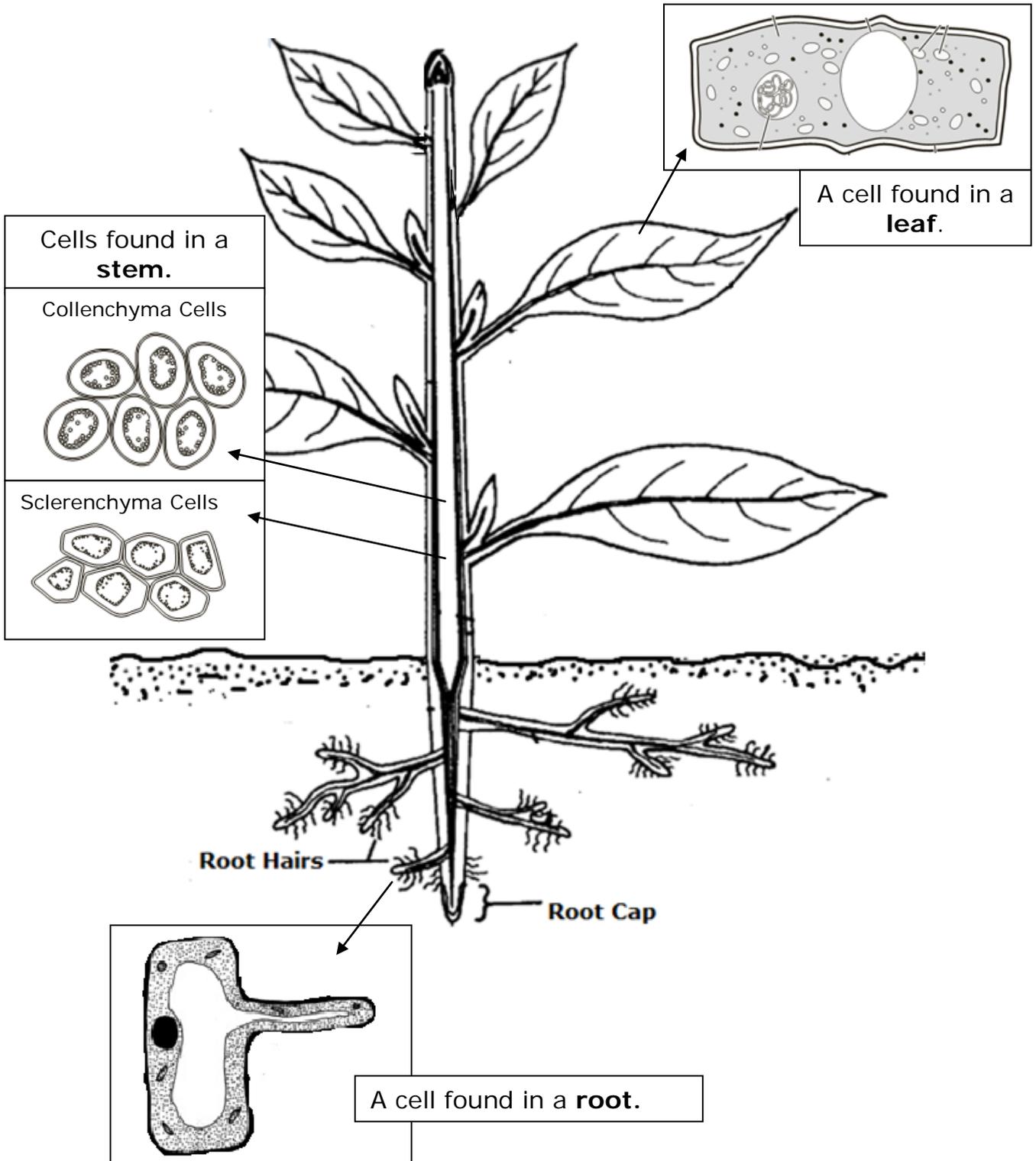
plant cells – plants are made up of millions of microscopic parts called cells. Cells can only be seen using a microscope. All of the processes of life go on in cells. The cells in different parts of a plant do different jobs. The cells have special features which help to do these jobs. They are adapted to carry out different functions.

Note: Pictures of plant cells can be located on Internet websites and in science textbooks especially Biology textbooks. Students can view plant parts under a compound microscope or hand lens. For best examination, the plant parts will need to be prepared before placing on a microscope slide. For methods of slide preparation, the assessment teacher could consult with science teachers at her campus or obtain information from the Internet. Internet resources include using clear nail polish and clear cellophane tape to make a leaf impression to examine.

plant parts and their function – Most plants have these parts:

- **Leaves** capture and absorb sunlight for photosynthesis. Photosynthesis is the process of absorbing sunlight to make food the plant needs.
- **Roots** absorb water and minerals; hold a plant firmly in the ground and provide support.
 - Plants get the water they need mainly through their roots. The roots have a type of cell called a root hair cell. These cells are found near the tip of the roots. Most water enters the root through them. The root hair cell projects out from the root into the soil. Roots have a big surface area and thin walls, which allow water to pass into them easily. Root cells do not normally contain chloroplasts.
- **Stems** support the flowers, leaves and branches of the plant and transports water and nutrients throughout the plant. Some plant stems are soft and flexible such as the stems of beans and grasses. Other plant stems are stiff and hard such as those of trees and shrubs.
 - Some cells found in stems are called collenchyma cells and sclerenchyma cells. These cells have thick cell walls and support the plant.
 - Collenchyma cells can be stretched. These cells act as structural supports for growing shoots since they can provide added strength without limiting the plant's growth
 - Sclerenchyma cells are rigid cells that cannot be stretched. They provide much of the structural support for parts of the plant that have stopped growing.

Parts of a Plant



Level 1: page 6

species - a group of organisms that are physically similar and can mate with each other and produce offspring that can also mate and reproduce

For the Level 1 task, the student will explore a large plant and small plant of the same species. In other words, the plant should be the same kind of plant but differ in size only.

STAAR 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.	
TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations	Essence of TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations
<p>Biology (5) Science concepts. The student knows how an organism grows and the importance of cell differentiation. The student is expected to</p> <ul style="list-style-type: none"> (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) examine specialized cells, including roots, stems, and leaves of plants; and animal cells such as blood, muscle, and epithelium; Supporting Standard (C) describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation; Supporting Standard (D) recognize that disruptions of the cell cycle lead to diseases such as cancer. Supporting Standard 	<p>Essence Statement A: Recognizes the importance of the cell cycle and cell differentiation to the growth of organisms.</p>

Level 3

Prerequisite skill: recognize levels of organization in plants and animals, including cells, tissues, organs, organ systems, and organisms

The student will determine the function of each part of a given plant. The student will compare the cells of each plant part. The student will determine why the cells are different for different plant parts.

Predetermined Criteria

1. The student will determine the function of each part of a given plant.
2. The student will compare the cells of each plant part.
3. The student will determine why the cells are different for different plant parts.

Process skill: use models to represent aspects of the natural world such as human body systems and plant and animal cells

Biology; Reporting Category 1 Bio (5); Essence Statement: A

Level 2

Prerequisite skill: observe, record, and compare how the physical characteristics of plants help them meet their basic needs such as stems carry water throughout the plant

The student will identify plant parts. The student will match the function of each part to its corresponding part. The student will be presented cells of each plant part. The student will identify a true statement about the relationship between cell structure and plant parts.

Predetermined Criteria

1. The student will identify plant parts.
2. The student will match the function of each part to its corresponding part.
3. The student will identify a true statement about the relationship between cell structure and plant parts.

Process skill: communicate observations and justify explanations using student-generated data from simple descriptive investigations

Level 1

Prerequisite skill: identify parts of plants such as roots, stem and leaves and parts of animals such as head, eyes, and limbs

The student will explore a small plant and a large plant of the same species. The student will participate in pairing plant parts from the small to the large plant. The student will respond to the growth of the larger plant that was stimulated by cell division.

Predetermined Criteria

1. The student will explore a small plant and a large plant of the same species.
2. The student will participate in pairing plant parts from the small to the large plant.
3. The student will respond to the growth of the larger plant that was stimulated by cell division.

Definitions/Examples for STAAR Reporting Category 2 Biology (6) Essence Statement B

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Levels 3, 2 and 1: pages 10 and 11

inherited traits – genetic characteristics passed from the parent organisms to its offspring

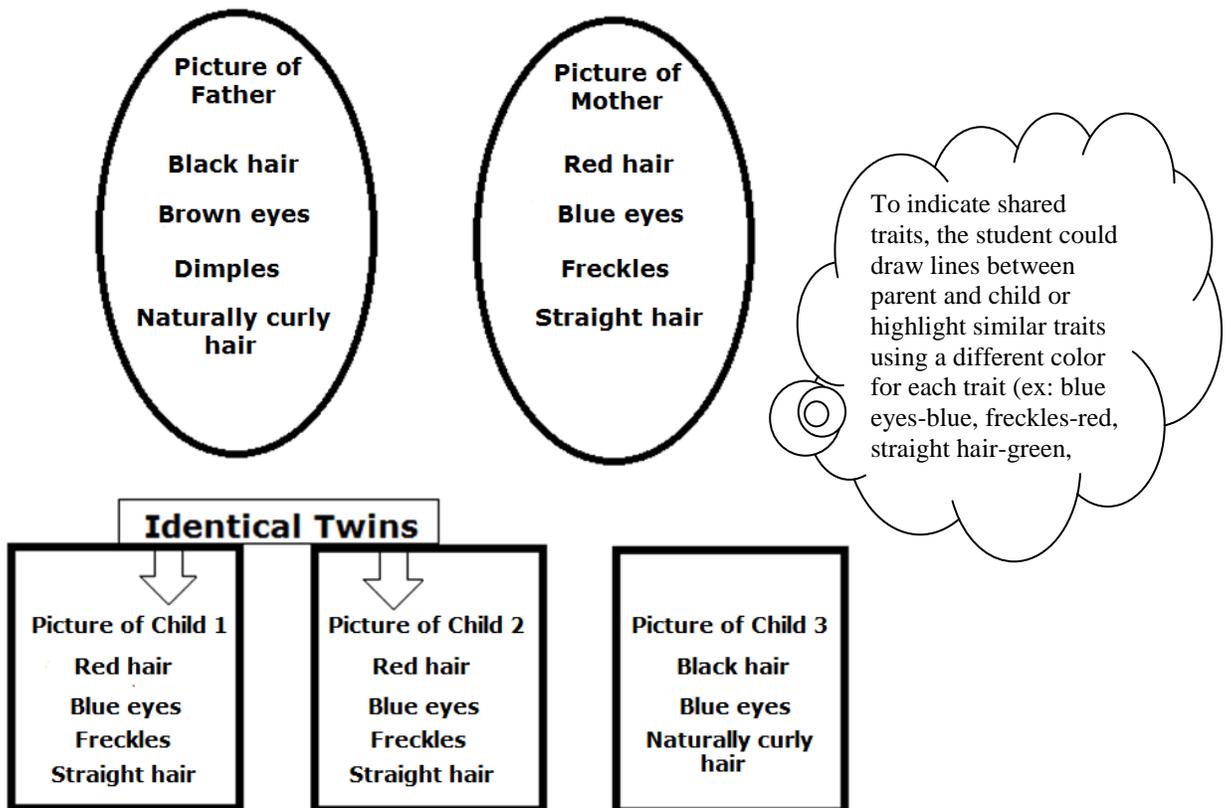
- Physical traits such as hair, skin, or eye color are inherited traits.

Levels 3 and 2: page 10

In the Level 3 assessment task, the student will *generate* a diagram showing what physical traits were inherited from each parent when presented pictures of members of a family with several children and one set of identical twins. In the Level 2 assessment task, the student will *complete* a diagram linking traits from the parent to an offspring (child).

Note:

- Although an example of a diagram is provided below, it is important that the Level 3 student creates or produces his or her own idea for the diagram which will need to include one set of identical twins.
- The Level 2 student will complete/finish a partially completed diagram. A diagram could be presented to the student similar to the example below but without identical twins.



Level 3: page 10

In the Level 3 assessment task for Predetermined Criteria 2, the student will determine which parent shared the most inherited traits with the identical twins. The teacher may guide the student using questions that do not lead to the answer.

Example of guiding questions:

- "How would you know that these were the twin's parents?"
- "What information helps you know which parent shared the most inherited traits with the identical twins?"
- "What do you know about inherited traits? In what ways do you look like your mother or father?"

Level 1: page 11

Examples of representations for inherited traits could include:

- a colored swatch of cloth to represent eye color
- a sample of artificial hair from a wig to represent hair color
- a doll's features to represent eye color, hair, dimples, freckles, and skin color

STAAR Reporting Category 2 – Mechanisms of Genetics: The student will demonstrate an understanding of the mechanisms of genetics.	
TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations	Essence of TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations
<p>Biology (6) Science concepts. The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. The student is expected to</p> <ul style="list-style-type: none"> (A) identify components of DNA, and describe how information for specifying the traits of an organism is carried in the 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; Readiness Standard (G) recognize the significance of meiosis to sexual reproduction; Supporting Standard (H) describe how techniques such as DNA fingerprinting, genetic modifications, and chromosomal analysis are used to study the genomes of organisms. Supporting Standard 	<p>Essence Statement B: Recognizes that the structure of DNA determines the inherited traits in organisms.</p>

Level 3

Prerequisite skill: differentiate between inherited traits of plants and animals such as spines on a cactus or shape of a beak and learned behaviors such as an animal learning tricks or a child riding a bicycle

The student will be presented pictures of members of a family having several children and one set of identical twins. The student will generate a diagram showing what physical traits were inherited from each parent. The student will determine which parent shared the most inherited traits with the identical twins. The student will justify why the identical twins have the same physical characteristics.

Predetermined Criteria

1. The student will generate a diagram showing what physical traits were inherited from each parent.
2. The student will determine which parent shared the most inherited traits with the identical twins.
3. The student will justify why the identical twins have the same physical characteristics.

Process skill: analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence

Level 2

Prerequisite skill: explore that some characteristics of organisms are inherited such as the number of limbs on an animal or flower color and recognize that some behaviors are learned in response to living in a certain environment such as animals using tools to get food

The student will identify an inherited trait. The student will be presented representations of a family which includes several children. The student will complete a diagram linking traits from the parent to an offspring. The student will identify an inherited trait that is shared between siblings.

Predetermined Criteria

1. The student will identify an inherited trait.
2. The student will complete a diagram linking traits from the parent to an offspring.
3. The student will identify an inherited trait that is shared between siblings.

Process skill: construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data

Level 1

Prerequisite skill: compare ways that young animals resemble their parents

The student will explore a representation for an inherited trait. The student will be presented representations for a parent and its offspring. The student will participate in pairing the inherited trait to the parent and its offspring. The student will acknowledge the trait on himself or herself.

Predetermined Criteria

1. The student will explore a representation for an inherited trait.
2. The student will participate in pairing the inherited trait to the parent and its offspring.
3. The student will acknowledge the trait on himself or herself.

Definitions/Examples for STAAR Reporting Category 3 Biology (8) Essence Statement C

The following definitions clarify terms used in the Biology assessment tasks to ensure that the content of the tasks is understood. When appropriate, examples and nonexamples have been provided for further clarification. These are just examples and do not represent all the appropriate ways to test the skills in the STAAR Alternate assessment tasks.

Level 3: page 13

animal kingdom – Animals are multicellular with specialized tissues and organs. Animals do not have cell walls.

- Examples of animals: worms, insects, fish, birds, reptiles, and mammals, including humans

plant kingdom – Plants are multicellular. Plants have cell walls and specialized tissues and organs. Plants can make their own food.

- Examples of plants: mosses, ferns, trees, and grasses

fungus kingdom – Most fungi are multicellular. All fungi have cell walls.

- Examples of fungi: mushrooms, yeasts, and molds

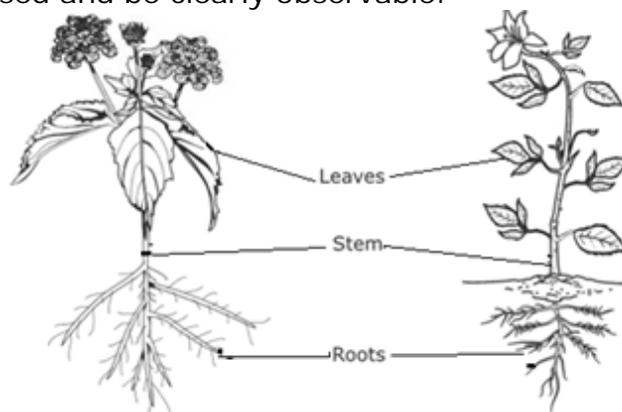
Level 2: page 14

plant parts that help the plant meet its basic needs:

- Roots absorb water and minerals from the soil, hold a plant firmly in the ground and provide support to the plant.
- Stem supports the flowers, leaves and branches of the plant and transports water and nutrients throughout the plant.
- Leaves capture and absorb sunlight for photosynthesis. Photosynthesis is the process of absorbing sunlight to make food the plant needs.
- Flowers are the reproductive parts of a plant. Flower petals and the flowers scent attract insects and bees to pollinate the flower. After pollination, seeds develop in a part of the flower.

Level 1: page 14

two unpotted plants – The two plants presented to the student should have the leaves, stems, and roots exposed and be clearly observable.



STAAR 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.	
TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations	Essence of TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations
<p>Biology (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</p> <ul style="list-style-type: none"> (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; Readiness Standard (C) compare characteristics of taxonomic groups, including archaea, bacteria, protists, fungi, plants, and animals. Supporting Standard 	<p>Essence Statement C: Knows that taxonomy is used to classify organisms based on shared characteristics.</p>

Level 3

Prerequisite skill: recognize that the broadest taxonomic classification of living organisms is divided into currently recognized Domains

Using reference materials, the student will generate a list of two characteristics for each of the plant, animal, and fungus kingdoms. The student will determine examples of organisms for each of the kingdoms. The student will compare the kingdoms.

Predetermined Criteria

1. The student will generate a list of two characteristics for each of the plant, animal, and fungus kingdoms.
2. The student will determine examples of organisms for each of the kingdoms.
3. The student will compare the kingdoms.

Biology; Reporting Category 3 Bio (8); Essence Statement: C

Level 2

Prerequisite skill: identify the basic needs of plants and animals

The student will identify two characteristics that classify a plant as a living thing. The student will be presented examples of plants from a variety of species. The student will identify the shared characteristics among the examples provided. The teacher will choose two plant parts. The student will identify the need met by each chosen plant part.

Predetermined Criteria

1. The student will identify two characteristics that classify a plant as a living thing.
2. The student will identify the shared characteristics among the examples provided.
3. The student will identify the need met by each chosen plant part.

Level 1

Prerequisite skill: identify and compare the parts of plants

The student will be presented two unpotted plants with different shaped leaves, stems, or roots. The student will acknowledge the leaves, stems, and roots of the first plant and then the same parts of the second plant. The student will participate in pairing the leaves, stems, and roots of the first plant to those of the second plant. The student will participate in placing the plants in soil and watering them.

Predetermined Criteria

1. The student will acknowledge the plants.
2. The student will participate in pairing the leaves, stems, and roots of the first plant to those of the second plant.
3. The student will participate in placing the plants in soil and watering them.

Definitions/Examples for STAAR Reporting Category 5 Biology (12) Essence Statement D

The following definitions clarify terms used in the Biology assessment tasks to ensure that the content of the tasks is understood. When appropriate, examples and nonexamples have been provided for further clarification. These are just examples and do not represent all the appropriate ways to test the skills in the STAAR Alternate assessment tasks.

Level 3: page 18

mutualistic relationship – a relationship between two organisms in which both species benefit

In the Level 3 assessment task, the student will conduct research about four different organisms in order to determine which two organisms have a mutualistic relationship. Reference materials for research can include science textbooks especially Biology textbooks, nonfiction books about animals, Internet resources, and appropriate periodicals.

Examples of mutualistic relationships are below:

- Green algae and clam – The green algae live inside the shell of the clam and provide it with the oxygen and food the clam needs to survive. In turn, the clam provides the algae with protection, carbon dioxide and nutrients from its waste products.
- Clownfish and sea anemones – The clownfish lives in the stinging tentacles of the sea anemone and gets protection from its predators due to the stinging tentacles. The clownfish is not affected by the anemone's sting. The clownfish cleans the anemone's tentacles by eating algae and leftover fish.
- Zebra and oxpecker bird – The oxpecker bird eats parasites and ticks that live on the zebra's skin. The oxpecker gets its food and the zebra gets rid of the disease-carrying parasites and ticks.
- Desert birds and cactus – In the desert, certain birds hollow a part of the cactus and live in it. The inside of the cactus is a good shelter against the hot desert sun. In return, the birds pollinate and also eat any parasite harmful to the cactus.
- Egyptian plover and crocodile – In the African jungles, the crocodile lies keeping its mouth open. The plover flies into the mouth of the crocodile and eats the decaying meat stuck in the crocodile's teeth. The crocodile gets his teeth cleaned and the plover gets food.

Sunbird and Rat's Tail Plant



A sunbird feeds on the nectar of a rat's tail plant. As the bird eats, it gets pollen on its chest feathers. The sunbird helps spread the plant's pollen.

Level 2: page 18

habitat – The place where an animal or species lives is called its habitat. A habitat usually contains all the things a species needs in order to live, such as food, shelter, water, and oxygen.

Examples of some habitats and the animals that live there:

Habitat	Description of habitat	Some animals that live in the habitat	What they eat
Desert	A dry, often sandy region that has little rainfall, extreme temperatures, and sparse vegetation.	kangaroo rat	seeds
		meerkat	insects and larvae
		nine-banded armadillo	fruits, ants, termites
Grassland	Land where mainly grass or grass-like vegetation grows, such as a prairie or a meadow.	bison	grass
		black rhinoceros	leaves, buds, shoots
		black-tailed prairie dog	grass
Wetland	An area of land where water covers the soil at or near the surface of the soil; any place where the soil stays moist and wet, such as bog, swamp, or marsh.	American alligator	small mammals
		boat-billed heron	fish, shrimp
		black-winged stilt	insects, aquatic animals

In the Level 2 assessment task, the student will identify one result that would occur if an animal lost its food source in its habitat.

Examples of likely outcomes for an animal that lost its food source:

- would starve and die
- move to another location
- adapt to another available food source

Level 1: page 19

In the Level 1 assessment task, the student will be presented an animal or representation of an animal in its natural environment.

Examples of an animal/representation of an animal in its natural environment include:

- picture/video of an animal in its habitat
- model of an animal in its habitat (ex. diorama, a three-dimensional miniature in which the animal is arranged in a naturalistic setting)
- actual classroom pet in its habitat in the classroom (hamster in cage, fish in aquarium, etc.)

STAAR 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.	
TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations	Essence of TEKS Knowledge & Skills Statement / STAAR-Tested Student Expectations
<p>Biology (12) Science concepts. The student knows that interdependence and interactions occur within an environmental system. The student is expected to</p> <ul style="list-style-type: none"> (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) recognize that long-term survival of species is dependent on changing resource bases that are limited; Supporting Standard (E) describe the flow of matter through the carbon and nitrogen cycles and explain the consequences of disrupting these cycles; Supporting Standard (F) describe how environmental change can impact ecosystem stability. Readiness Standard 	<p>Essence Statement D: Knows that interdependence and interactions occur within an environmental system.</p>

Level 3

Prerequisite skill: observe the way organisms live and survive in their ecosystem by interacting with the living and non-living elements

The student will be presented a wide array of reference materials and representations of four living organisms, two of which have a mutualistic relationship. The student will conduct research about the four different organisms. The student will determine which two organisms have a mutualistic relationship. The student will determine how each organism benefits from the relationship.

Predetermined Criteria

1. The student will conduct research about the four different organisms.
2. The student will determine which two organisms have a mutualistic relationship.
3. The student will determine how each organism benefits from the relationship.

Process skill: analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence

Level 2

Prerequisite skill: identify and describe the flow of energy in a food chain and predict how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field

The student will be presented a model or representation of a habitat. The student will identify three living organisms that live in the habitat. The student will match a food source to each organism. The student will identify one result that would occur if an animal lost its food source.

Predetermined Criteria

1. The student will identify three living organisms that live in the habitat.
2. The student will match a food source to each organism.
3. The student will identify one result that would occur if an animal lost its food source.

Level 1

Prerequisite skill: gather evidence of interdependence among living organisms such as energy transfer through food chains and animals using plants for shelter

The student will be presented an animal or a representation of an animal in its natural environment. The student will acknowledge the animal. The student will be presented the animal's food source from its environment. The student will participate in pairing the animal with its food source. The student will acknowledge a representation for "eat."

Predetermined Criteria

1. The student will acknowledge the animal.
2. The student will participate in pairing the animal with its food source from its environment.
3. The student will acknowledge a representation for "eat."