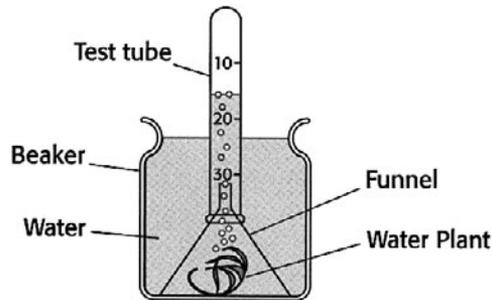


TEKS 4.B.9.B**Biology****STANDARD PRACTICE**

- 1 Plant cells have mitochondria, which use glucose to produce ATP. Where does the glucose originate?
- A Photosynthesis, which occurs in chloroplasts
 - B Fermentation, which occurs in the absence of oxygen
 - C Exocytosis, which transports the glucose into the cells
 - D Diffusion, which transports the glucose from the digestive tract



- 2 A student conducted an experimental investigation of the gas production of a water plant. She placed a funnel and test tube upside down over a water plant submerged in water and collected the gas that the water plant produced when kept in sunlight. After several days, a large bubble of gas collected in the upside-down test tube. Given that the gas came from the water plant, what are the contents of the bubble of gas collected in the test tube?
- A The gas contains one of the products of respiration, oxygen.
 - B The gas contains one of the products of photosynthesis, oxygen.
 - C The gas contains one of the products of respiration, carbon dioxide.
 - D The gas contains one of the products of photosynthesis, carbon dioxide.
- 3 Humans and other heterotrophs get their energy from eating food. What process in human body cells transfers the energy stored in a grilled cheese sandwich to ATP?
- A Electrolysis
 - B Calvin cycle
 - C Photosynthesis
 - D Cellular respiration

TEKS 4.B.9.C**Biology****STANDARD PRACTICE**

- 1 Enzymes are protein catalysts. What is the role of a catalyst?
- A Provides extra energy for a reaction
 - B Lowers the activation energy of a reaction
 - C Allows only irreversible reactions to happen
 - D Eliminates the activation energy of a reaction
- 2 Living things use enzymes in the chemical reactions of metabolism. When food is digested, it is metabolized to release energy. Which statement best describes the role of an enzyme in this process?
- A Because enzymes are proteins, they only react with other protein molecules, resulting in the production of glucose.
 - B The active site of the enzyme attached to the substrate of a food molecule produces carbon molecules, the building blocks of cells.
 - C The active site of an enzyme attached to a substrate prevents the chemical reactions involved in metabolism from happening too quickly.
 - D The active site of the enzyme binds to a substrate on a food molecule and the enzyme changes shape slightly, causing a chemical reaction to happen.

| Digestive Enzymes in the Small Intestine | | |
|---|------------------|-------------------------|
| Enzyme | Substrate | Digested product |
| Amylase (pancreas) | starch | disaccharides |
| Trypsin (pancreas) | proteins | peptides |
| Lipase (pancreas) | fat | fatty acid and glycerol |
| Maltase, sucrase, lactase | disaccharides | monosaccharides |
| Peptidase | peptides | amino acids |

- 3 The table above lists some digestive enzymes found in the human small intestine. Based on the information in the table, what would be one effect of an injured pancreas?
- A The blood levels of monosaccharides would increase.
 - B The absorption of amino acids would be more efficient.
 - C The body would be unable to process starches, proteins, and fats.
 - D The levels of the enzymes amylase, trypsin, and lipase would increase.

TEKS 4.B.10.A**Biology****STANDARD PRACTICE**

- 1 Heart rate, or the rate at which the muscles in the heart contract, is controlled by the sinoatrial node, a group of cells in the cardiac muscle of the right atrium. Heart rate decreases when you are asleep and increases when you are awake. Some people require an artificial pacemaker to regulate their heart rate if it is too slow. Which hypothesis explains how the body might be affected by a dangerously slow heart rate?
- A The body might have trouble falling asleep or feeling rested after a full night of sleep.
 - B Cells in the body might not receive enough oxygen, which could cause the person to faint.
 - C The adrenal gland might not produce enough hormones to prepare the body for a quick reaction.
 - D Breathing might become shallow, which could cause the person to retain too much carbon dioxide.
- 2 The human immune system can produce a specific response or a nonspecific response to infection. Which of the following is a specific immune response of the human immune system?
- A Fever
 - B Inflammation
 - C Antigen display
 - D Interferon release
- 3 Some disorders result in a drastic drop-off in the number of platelets in the blood. What effect would a low “platelet count” have on the body?
- A A person with this disorder would become anemic.
 - B The risk of bleeding from a wound would increase.
 - C The body would not be able to fight off infectious diseases.
 - D The risk of stroke or heart attack would increase due to blood clots.

TEKS 4.B.10.B**Biology****STANDARD PRACTICE**

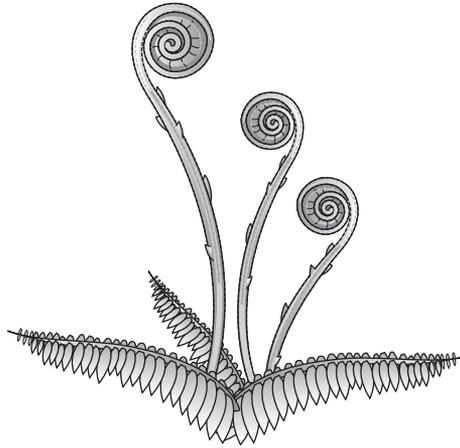
- 1 The stomata on a saguaro cactus must open to let in carbon dioxide from the atmosphere. When each stoma opens, however, water can escape from the plant. How does the saguaro minimize the loss of water when stomata open?
 - A Guard cells open and close the stomata rapidly during the day to let as little water as possible escape.
 - B Guard cells open the stomata only at night, when the air temperature is cooler and the humidity somewhat higher.
 - C Guard cells always keep the stomata open slightly, so that carbon dioxide can flow in but very little water can flow out.
 - D The saguaro has fewer stomata than any other plant, an adaptation that prevents water loss through transpiration.

- 2 A unique characteristic of the banyan tree is that roots grow down from its branches into the ground. The tree can appear to have several trunks. What advantage does this root characteristic give the banyan tree over other trees?
 - A The roots provide shelter for ground-dwelling animals, which carry nutrients to the tree.
 - B The banyan can grow near the equator, because aboveground roots are more protected from the sun.
 - C The banyan can only grow in humid climates, because aboveground roots are more likely to dry out and die during droughts.
 - D The banyan can grow in areas prone to hurricanes and typhoons, because the roots make the tree more stable in high winds.

TEKS 4.B.10.B

Biology

3 The drawing below shows fiddleheads from a fern.



A fiddlehead develops into what plant part?

- A Stem
- B Seed
- C Flower
- D Leaf or frond

TEKS 4.B.10.C**Biology****STANDARD PRACTICE**

- 1 Which of the following levels of organization is the least complex?
- A Cell
 - B Organ
 - C Tissue
 - D Individual organism

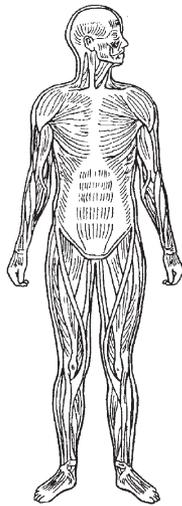


Figure 1

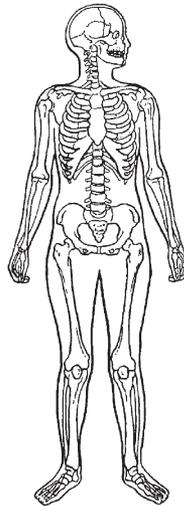


Figure 2

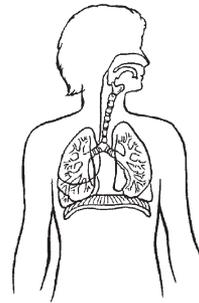


Figure 3

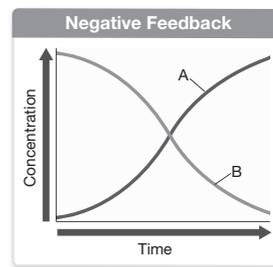
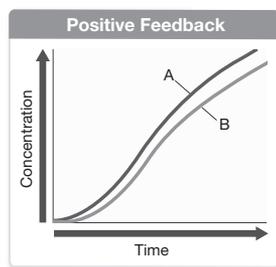
- 2 What level of biological organization is represented by each of the figures shown above?
- A Organ
 - B Tissue
 - C Organ system
 - D Individual organism
- 3 Which list shows the levels of biological organization in order from simplest to most complex?
- A Cell → organ → tissue → organ system → organism
 - B Cell → tissue → organ → organ system → organism
 - C Organism → organ → organ system → tissue → cell
 - D Organism → organ system → organ → tissue → cell

TEKS 4.B.11.A**Biology****STANDARD PRACTICE**

- 1 When skin is exposed to excess sunlight, skin cells produce more melanin, a dark pigment that helps protect against the harmful effects of rays from the sun. Melanin production is an example of which of the following?
 - A Metabolism
 - B Reproduction
 - C Energy production
 - D Homeostasis

- 2 Which of the following describes how a body would react to a high external temperature to maintain homeostasis?
 - A The body will shiver to lower its internal temperature.
 - B The body will sweat to lower its internal temperature.
 - C The body will shiver to raise its internal temperature.
 - D The body will sweat to raise its internal temperature.

- 3 In a positive feedback system, substance A stimulates B. In a negative feedback system, substance A inhibits the production of substance B.



Which type of feedback system described above would be most efficient at keeping a substance at relatively constant levels?

- A A positive feedback system would be most efficient.
- B A negative feedback system would be most efficient.
- C Either a negative feedback system or a positive feedback system would be most efficient, depending on the organs involved.
- D Neither a positive nor a negative feedback system can maintain homeostatic conditions.