

## Fifth Grade “Plant Structures and Processes” Assessment

1a. A nonvascular plant does not have the \_\_\_\_\_ for transporting water and nutrients throughout the plant.

1b. What is a nonvascular plant?

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1c. What is a nonvascular plant? Give an example of a nonvascular plant.

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2a. A vascular plant has tube-like structures that allow \_\_\_\_\_ and \_\_\_\_\_ to move through the plant.

2b. What is a vascular plant?

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2c. What is a vascular plant? Give an example of a vascular plant.

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3a. What part of a vascular plant has the following characteristics: grows downward and holds the plant in place, absorbs water and minerals from the soil, and often stores food?

bud                  leaves                  roots                  stems

3b. What part of a vascular plant has the following characteristics: grows downward and holds the plant in place, absorbs water and minerals from the soil, and often stores food?

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3c. Compare a root to a leaf.

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4a. What part of a vascular plant has the following characteristics: tube-like structure used for support and transporting water and nutrients up to the plant and transporting glucose that is stored as food in the roots?

bud                  leaves                  roots                  stems

4b. What part of a vascular plant has the following characteristics: tube-like structure used for support and transporting water and nutrients up to the plant and transporting glucose that is stored as food in the roots?

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4c. Explain how a stem works.

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5a. What part of a vascular plant has the following characteristics: a small swelling on a plant from which a flower or leaf grows?

bud            leaves            roots            stems

5b. What part of a vascular plant has the following characteristics: a small swelling on a plant from which a flower or leaf grows?

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5c. Explain the function of a bud.

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6a. What part of a vascular plant has the following characteristics: green part of a plant that is flat and broad, which contains chloroplasts that absorb the sun's energy for photosynthesis?

bud            leaves            roots            stems

6b. What part of a vascular plant has the following characteristics: green part of a plant that is flat and broad, which contains chloroplasts that absorb the sun's energy for photosynthesis?

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6c. Explain the leaf's role in photosynthesis.

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7a. What is the system of vessels in a plant that carries food from the leaves to the rest of the plant?

Xylem                      Phloem

7b. What is the system of vessels in a plant that carries food from the leaves to the rest of the plant?

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7c. Compare the phloem to the xylem.

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8a. What is the systems of vessels in a plant that transport water and nutrients in a plant?

Xylem                      Phloem

8b. What is the systems of vessels in a plant that transport water and nutrients in a plant?

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8c. Explain what the xylem is and how it is different from the phloem.

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9a. What process takes in energy from the sun to produce food for green plants?

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9b. What is photosynthesis?

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9c. Explain the role of the following in photosynthesis: energy from sunlight, chlorophyll, carbon dioxide and water, xylem and phloem, stomata, oxygen, sugar (glucose).

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10a. Photosynthesis is an important life process that occurs in \_\_\_\_\_ cells, but not animal cells.

10b. Photosynthesis is an important life process that occurs in \_\_\_\_\_ cells, but not \_\_\_\_\_ cells.

10c. Compare plant cells and animal cells.

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11a. When plants and animals produce offspring, what is the process called?

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11b. What is reproduction?

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11c. What is reproduction? Name the two types of reproduction and compare them.

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12a. When reproduction requires only one parent cell it is called \_\_\_\_\_.

12b. What is asexual reproduction?

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12c. What is asexual reproduction? Give an example of at least one type.

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13a. What kind of reproduction occurs in mosses and ferns?

Asexual

Sexual

13b. What type of reproduction occurs in mosses and ferns?

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13c. Explain the life cycle of either a moss or fern.

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14a. What is a gymnosperm?

Covered seed

Naked seed

14b. What is a gymnosperm? Give an example of a gymnosperm.

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14c. Explain the roles of male and female cones and wind pollination in sexual reproduction of a conifer.

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15a. What is an angiosperm?

Covered seed

Naked seed

15b. What is an angiosperm?

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15c. What is an angiosperm and how is it different from a gymnosperm?

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16a. The part of the flower that is usually green and looks like leaves attached to the stem is called \_\_\_\_\_.

ovary            petals            pistil            sepals            stamen

16b. The part of the flower that is usually green and looks like leaves attached to the stem are called \_\_\_\_\_.

16c. What is the sepal and what is its function?

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17a. The part of the flower that is colorful to attract insects, which are often important for bringing the right sperm to the egg, is called the \_\_\_\_\_.

ovary            petals            pistil            sepals            stamen

17b. The part of the flower that is colorful to attract insects, which are often important for bringing the right sperm to the egg, is called the \_\_\_\_\_.

17c. What are the petals and what is their function?

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18a. The part of the flower that is the male reproductive organs is called the \_\_\_\_\_.

ovary            petals            pistil            sepals            stamen

18b. The part of the flower that is the male reproductive organs is called the \_\_\_\_\_.

18c. Name two parts of the stamen and describe their functions:

1. \_\_\_\_\_

2. \_\_\_\_\_

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19a. The female part of the flower that is a solid tube which leads down to the egg is called the \_\_\_\_\_.

ovary          petals          pistil          sepals          stamen

19b. The female part of the flower that is a solid tube which leads down to the egg is called the \_\_\_\_\_.

19c. Name two parts of the pistil and describe their functions:

1. \_\_\_\_\_
  2. \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

20a. The female part of the flower that protects the egg is called the \_\_\_\_\_.

ovary          petals          pistil          sepals          stamen

20b. The female part of the flower that protects the egg is called the \_\_\_\_\_.

20c. What is the difference between an ovary and an ovule?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

21a. Put these stages of reproduction in sequential order:

- \_\_\_ \* Mature fruit or vegetable houses seeds for next generation
- \_\_\_ \* Pollination
- \_\_\_ \* Ovary continues to grow
- \_\_\_ \* Fertilization
- \_\_\_ \* Ovary begins to grow as flower petals die

21b. What are the reproduction stages of a flowering plant?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

21c. What are the reproduction stages of a flowering plant? What are two ways that pollination can happen?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

22a. The very young plant that is usually contained in the seed is called the \_\_\_\_\_.  
seed coat      embryo      endosperm      germination

22b. The very young plant that is usually contained in the seed is called the \_\_\_\_\_.

22c. What is an embryo?

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23a. The part of the seed that contains the food is called the \_\_\_\_\_.  
seed coat      embryo      endosperm      germination

23b. The part of the seed that contains the food is called the \_\_\_\_\_.

23c. What is an endosperm?

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24a. The part of the seed that is a sprouting of a new plant is called \_\_\_\_\_.  
seed coat      embryo      endosperm      germination

24b. The part of the seed that is a sprouting of a new plant is called \_\_\_\_\_.

24c. Identify the life cycle of a plant beginning with germination.

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25a. The part of the seed that protects and keeps it from drying out is called the \_\_\_\_\_.

seed coat      embryo      endosperm      germination

25b. The part of the seed that protects and keeps it from drying out is called the \_\_\_\_\_.

25c. What is the seed coat's function?

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The following Colorado Model Content Standards are covered in this assessment by the questions indicated:

Questions 1a, 1b, 1c, 2a, 2b, 2c: Standard 5-8.3.1.a constructing and using classification systems based on the structure of organisms

Questions 3a, 3b, 3c, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 6c: Standard 5-8.3.1.b describing the importance of plant and animal adaptations

Questions 9a, 9b, 9c, 10a, 10b, 10c: Standard 5-8.3.2.a describing the basic processes of photosynthesis and respiration and their importance to life

Questions 7a, 7b, 7c, 8a, 8b, 8c: Standard 5-8.3.2.c describing ways that multicellular organisms get food and other matter to their cells

## Answer Key

- 1a. structures
- 1b. Acceptable answers could include:  
-a nonvascular plant does not have the structures for transporting water and nutrients throughout the plant
- 1c. Acceptable answers could include:  
-a nonvascular plant does not have the structures for transporting water and nutrients throughout the plant  
-Example: algae
- 2a. water, nutrients
- 2b. Acceptable answers could include:  
-Vascular plants have tube like structures that allow water and dissolved nutrients to move through the plant.
- 2c. Acceptable answers could include:  
-Vascular plants have tube like structures that allow water and dissolved nutrients to move through the plant.  
-Example: tree, flower, grass, celery, etc.
- 3a. roots
- 3b. roots
- 3c. Acceptable answers could include:  
-roots grow downward and hold the plants in place, leaves grow upward from the plant above the ground: roots absorb water and minerals from the soil, leaves absorb the sun's energy to make food; and both can store food for the plant
- 4a. stems
- 4b. stems
- 4c. Acceptable answers could include:  
-stems contain two tube like structures inside them, the xylem transports water and nutrients up to the plants leaves for photosynthesis to take place and the phloem transports the by products of photosynthesis like glucose down to the roots to be stored as food
- 5a. bud
- 5b. bud
- 5c. Acceptable answers could include:  
-A bud is a small swelling on a plant that protects the flower or leaf that will grow from it. It contains part of the food supply for the flower. As the nutrients reach the bud, they allow the flower or leaf to mature, until it can come out of the bud
- 6a. leaves
- 6b. leaves

- 6c. Acceptable answers could include:  
 -The leaf plays an important part in photosynthesis because of its flat and broad shape. It contains chloroplasts, therefore it is able to absorb more of the Sun's energy through its stomata. This allows for the changing into food during photosynthesis
- 7a. phloem  
 7b. phloem  
 7c. Acceptable answers could include:  
 -The phloem is a system of vessels in a plant that carries food from the leaves to the rest of the plant while the xylem is a system of vessels that transport water and nutrients from the roots to the rest of the plant.
- 8a. xylem  
 8b. xylem  
 8c. Acceptable answers could include:  
 -the xylem is a system of vessels that transport water and nutrients in a plant and the difference between it and the phloem is that the phloem carries food down the stem and the xylem carries water and nutrients up the stem
- 9a. photosynthesis  
 9b. Acceptable answers could include:  
 -Photosynthesis is a process that takes place in green plants when the plant uses the energy in sunlight to make food for it.  
 9c. Acceptable answers could include:  
 -Photosynthesis is a process in green plants where the energy from the sunlight strikes the chlorophyll in the leaves of plants to make food. Carbon dioxide is absorbed through stomata in the leaves. The xylem absorbs the water from the ground and transports it to the leaves. The sunlight causes water molecules to split. Hydrogen combines with the carbon dioxide to produce glucose, which is food for the plant. The phloem moves the glucose to the roots to be stored as food. The left over oxygen is released into the air by the stomata in the leaves.
- 10a. plant  
 10b. plant, animal  
 10c. Acceptable answers could include:  
 -Plant cells carry out photosynthesis to make their own food, animal cells do not; plant cells have chloroplasts and animal cells do not; plant cells have a cell wall and animal cells do not; both however have cell membranes, mitochondria, vacuoles, though the plant cell have one or two large ones while the animal cell has many small ones, nucleus, ribosomes, lysosomes, and golgi bodies.
- 11a. reproduction  
 11b. Acceptable answers could include:  
 -reproduction is the process when plants or animals produce offspring  
 11c. Acceptable answers could include:  
 -Reproduction is the process when plants or animals produce offspring. There are two

types of reproduction asexual and sexual. In asexual reproduction only one parent cell is needed. In sexual reproduction two parent cells are needed to produce offspring.

12a. asexual

12b. Acceptable answers could include:

-Asexual reproduction is the kind of reproduction in which it is not necessary to have two parents to produce offspring, only one is needed

12c. Acceptable answers could include:

-Asexual reproduction is the kind of reproduction in which it is not necessary to have two parents to produce offspring, only one is needed.

-Examples: the reproduction of single-celled organisms through fission, the production of spores on some plants and plant like organisms, the budding process from yeast cells, and larger animals and plants can regenerate

13a. sexual

13b. sexual

13c. Acceptable answers could include:

-In a moss, the spore lands in a moist, nutrient rich spot where it grows into a special kind of moss plant. The plant usually looks like green thread. The thread develops buds that grow into small plants, some of which are male and others female. Afterward, the thread usually dies. The male moss plants make male gametes; the female plants make female gametes. When a male and female plant are close enough together, and there is some water present, a male gamete is able to swim to a female gamete and fertilize it. This fertilized egg makes a capsule in which new spores are formed; the mature spores fall on moist ground, and the process starts over again.

-The life cycle of a fern is similar to that of a moss. When the fern spore gets wet it germinates, turning into a tiny, heart-shaped plant that produces both male and female gametes. When these male and female gametes come together, the fertilized egg grows into a totally new and different plant that will become the large fern you can find in the woods. The mature fern produces spores under its leaves. In time the spores burst from their caps and start the cycle over again.

14a. naked seeds

14b. Acceptable answers could include:

- conifer/pine tree

-A gymnosperm is a naked seed because it has nothing on except its own skin.

14c. Acceptable answers could include:

-Pollen from the male pine cone is carried by the wind and sticks to the eggs inside the larger female pine cone. Tubes that grow from the grains of pollen pierce the eggs in the female cone, and a male gamete passes through the egg wall and fertilizes the egg. Each fertilized egg then grows into a seed, which drops to the ground when the cone opens. The seed grows into a new tree if enough food and water are present.

15a. covered seed

15b. Acceptable answers could include:

-An angiosperm is a plant that has its seed covered with something to protect it.

15c. Acceptable answers could include:

-An angiosperm is a plant that has its seed covered with something to protect it. It is different from a gymnosperm because it is protected with a covering while a gymnosperm has nothing over it but its skin.

16a. sepals

16b. sepals

16c. Acceptable answers could include:

-Sepals are part of the flower that is usually green and looks like leaves attached to the stem they are a protective covering before the petals mature and open up then they help support the sepal.

17a. petals

17b. petals

17c. Acceptable answers could include:

-The petals are the colorful part of the flower. Their job is to attract insects which are often important for bringing the right sperm to the egg.

18a. stamen

18b. stamen

18c. Acceptable answers could include:

-The stamen is the male reproductive organs. It has two parts an anther on its tip, where millions of tiny pollen grains are attached which hold the sperm cells used in reproduction. The other part is the filament which is the stalk like part that attaches it to the rest of the flower.

19a. pistil

19b. pistil

19c. Acceptable answers could include:

-The pistil is the female part of the flower that is a solid tube that leads to the egg. The top part of it is the stigma where the sperm cells in the pollen on the anther are attracted and the tube part is the style which serves as the passage way for the sperm from the pollen to get to the egg cell in the plant ovary and then fertilize it.

20a. ovary

20b. ovary

20c. Acceptable answers could include:

-The difference between an ovary and an ovule is that an ovary is the enlarged hollow part of the pistil, containing ovules and an ovule is the body that, upon fertilization, becomes the seed.

21a. 5, 1, 4, 2, 3

21b. Acceptable answers could include:

-The stages of reproduction in a flowering plant: pollination, fertilization, ovary begins to grow as flower petals die, ovary continues to grow, mature fruit or vegetable houses seeds for next generation.

21c. Acceptable answers could include:

-The stages of reproduction in a flowering plant: pollination, fertilization, ovary begins to grow as flower petals die, ovary continues to grow, mature fruit or vegetable houses seeds for next generation. Pollination can occur between plants when pollen is carried by the wind or by insects, such as the honeybee, or within the same plant.

22a. embryo

22b. embryo

22c. Acceptable answers could include:

-An embryo is a very young plant that is usually contained in the seed.

23a. endosperm

23b. endosperm

23c. Acceptable answers could include:

-The endosperm is the food for the young plant until it can produce its own. Much like a young animal must first get food from its mother until it too can get its own, because the animal cannot produce its own.

24a. germination

24b. germination

24c. Acceptable answers could include:

-The life cycle of a plant beginning with germination or the sprouting of a new plant, then moves into pollination or the release of pollen which contains sperm cells onto the stigma, then the sperm cell flows down the style and joins with it or fertilization, and last, when it has matured enough seed dispersal or the scattering of seeds, so the whole process can begin again.

25a. seed coat

25b. seed coat

25c. Acceptable answers could include:

-The function of the seed coat is to help protect the embryo and keep it from drying out so that the tiny new plant has a better chance of life.