Adaptations in Plants
Teacher Facilitation Notes

In General . . .

- Project the slide deck in edit mode–do not show it as a slideshow.
- Hide the speaker notes before projecting. (View/Show Speaker Notes)
- Hide the toolbar. (Click on the up arrow at the right end of the tool bar.)
- Call on students to read the various content shown on slides.
- For each investigation, assemble the needed materials for each group and place in a central location for ease of distribution.
- Duplicate copies of the data sheets for each student.

Materials Needed:

Engage: Plant Parts
Artificial flower stem with leaves, 1 per group

Explore: Changing with the Times
Student Data Sheet, 1 per student
Pencil, 1 per student

Explain: Plants and Environments
Reading Passage, 1 per student
Pencil, 1 per student

Evaluate
Quiz, 1 per student
Pencil, 1 per student

Other Materials
Science Notebook, 1 per student
Pencil, 1 per student
Student Sheet

Engage: The Parts of a Plant

- Give each group an artificial flower stem. Ask students what the flower stem represents (a real plant). In their science notebooks, have students compare the artificial flower with a real plant. Instruct them to write three ways the artificial plant is like a real plant and three ways they are different.
- Show the first slide and discuss what external parts the artificial plant has.
- Read the second slide about the needs of plants. Ask students how they think real plants get the things they need in order to survive. Can they hunt for food? Can they dig in the ground for water? Lead students to the idea that the external parts of plants help the plants get the sunshine, water and nutrients that they need to survive.
- Display and discuss the slides illustrating the parts of a tomato plant and a conifer. (The term *conifer* will not be tested, but students should be aware of the different parts that conifers have.)

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Explore: Changing With the Times

- Read through the introductory slide with the students. Be sure that they understand that plants have adaptations in both external structures and in the functions that the functions carry out for the plant.
- Go through each slide, observing, reading, and discussing thoroughly. Call on volunteers to identify the functions of each plant structure. Monitor to make sure students are recording at least two functions of each plant structure on their data sheets. If desired, use the semi-transparent rectangle on each page to highlight the functions. Resize, copy, and paste the rectangles as needed.
- After completing all of the Explore slides, allow students to share different functions of each plant structure, if desired.

Explain: Plants and Environments

- Go through each slide, observing, reading, and discussing thoroughly. If necessary give students background on each biome that is mentioned.
- Have students complete the reading passage and answer its questions independently. Discuss as desired.

Elaborate: Stranger Things

- Go through each slide, discussing as desired.
- Make sure students understand that each type of plant has adaptations, but don't hold them responsible for specialized vocabulary, such as "epiphyte".
- You might also explain that carrion beetles and flesh flies are insects that feed on dead animals and rotting meat.

Evaluate

- Let students complete the quiz independently.
- Discuss evaluation activities as desired.

Adaptations in Plants

Name: KEY

Explain: Plants and Environments

1. Why do the spines on a desert plant most likely keep an animal from eating the plant?

   A The sharp, pointed spines may hurt the animal that tries to eat it.
   B The thick spines hold poison that makes an animal itch.
   C The wax-covered spines are invisible so the animal cannot see them.
   D The brown spines hold water which desert animals do not need.

2. Why do organisms like plants need to adapt to their environments? Mark all answers that apply.

   F To have pretty flowers that people like
   G To attract animals that might eat them
   H To survive in different environments
   J To give animals like birds shelter
   K To meet their needs

3. In which environment will the trees most likely be evergreen and not lose their leaves in the winter?

   A The desert
   B The taiga
   C The rainforest
   D The ocean

4. What is an adaptation that both desert plants and grassland plants both have?

   F Thick stems
   G Sharp thorns
   H Stems that bend easily
   J Leaves coated with wax

Adaptations in Plants

Name: KEY

Evaluation

1. Carefully study the pictures below. Then draw lines to match the seeds to the way you think the plants have adapted to spread their seeds.

Dandelion

Blackberry

Musk twistle

A.	Dandelion	Animal droppings
B.	Blackberry	Animal fur
C.	Twistle	Wind

2. The large leaves on a sunflower plant help the plant–

F get water from the ground

G protect itself from herbivores

H absorb oxygen from the air

J get carbon dioxide from the air

3. Oak trees drop their seeds onto the dirt below their leaves. Which of the following colors would an oak tree seed need to be to help it not be eaten by an animal?

A White

B Yellow

C Blue

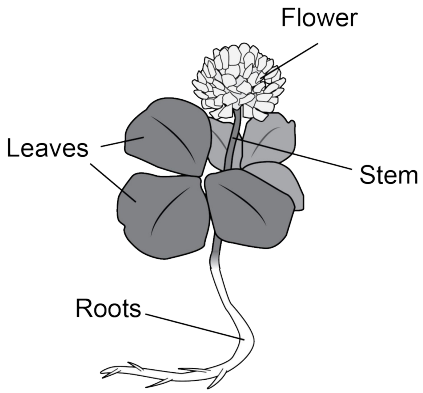
D Brown

Adaptations in Plants

Name: KEY

Evaluation

4. The illustration shows the structures found in a clover plant. Which part of the clover has the main function of attracting pollinators to spread pollen from the clover to other plants?



Clover Plant

- **F** The flower
- **G** The leaves
- **H** The stem
- **J** The roots

5. Which feature of the rainforest plant leaf pictured here is a special adaptation to the large amount of rain that fall in the rainforest?

- **A** The shape of the leaf
- **B** The green color of the leaf
- **C** The pointed tip of the leaf
- **D** The sweet odor of the leaf

6. Which of the following best describes the function of a tree trunk?

- **F** To gather sunlight and make food for the tree
- **G** To find water in the soil and anchor the tree in place
- **H** To carry water to the leaves and give support to the tree
- **J** To grow flowers and the seeds needed to make new trees

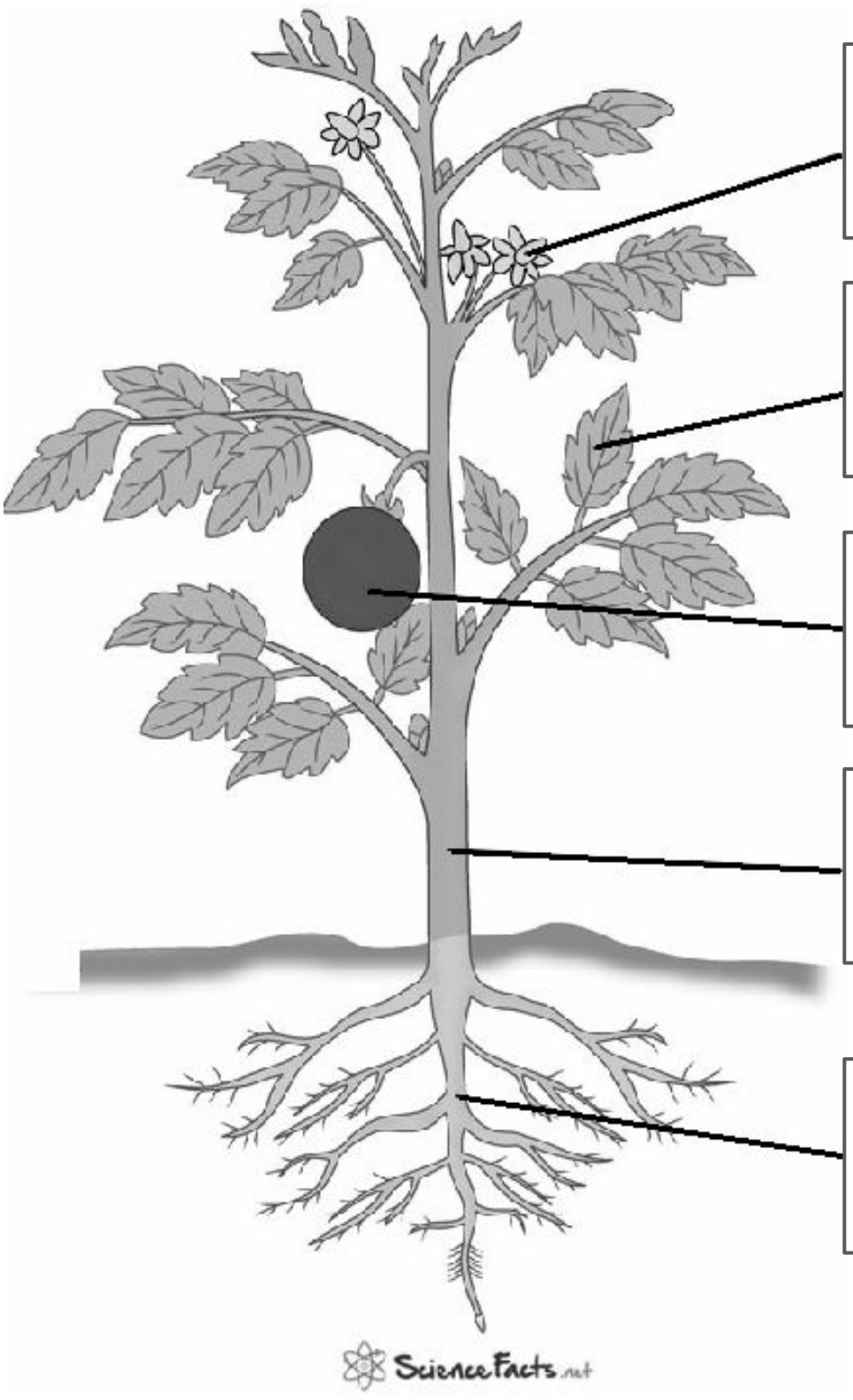
7. Which object would best demonstrate how a plant's roots function in soil?

- **A** A rock
- **B** A sponge
- **C** A mirror
- **D** A bottle of perfume

Adaptations in Plants

Name: _____

Engage: The Parts of a Plant



Adaptations in Plants

Name: _____

Explore: Changing With the Times!

Directions: List at least two functions of each plant part listed below.

1. Roots _____

_____

_____

_____

2. Stems _____

_____

_____

_____

3. Leaves_____

_____

_____

_____

4. Flowers _____

_____

_____

_____

5. Seeds _____

_____

_____

_____

Adaptations in Plants

Name: _____

Explain: Plants and Environments

Living things adapt to their environments so that they can survive. A plant adapts when it develops body parts that help it survive. Plants have adaptations to help them live and grow in different areas. Some plants can even grow in water.

Some aquatic plants float on the surface of the water. They have long, thin roots that grow down through the water to the mud below. Most aquatic plants have thin, air-filled stems and leaves to help them make their own food.

In a thick forest, some trees grow taller than the other plants around them. This lets them reach the sunlight. Growing taller is an adaptation that helps the trees survive. Shorter plants in the forest have adapted by developing broad leaves to absorb more sunlight.

Plants growing in desert take in a lot of water very quickly when it rains. These plants store the water in their thick stems, which have a waxy coating to keep in the water. The spines or thorns on some desert plants keep away animals that might eat the plant. The spines also hold in water during dry times. Some desert plants grow roots that spread out just under the surface, while others in very dry areas have deep roots to absorb water.

In grasslands, plants must adapt to dry, hot summers and cold winters. These plants have very deep roots to reach water in the ground. Many grass plants have thorns or spikes to keep them from being eaten by animals. Grassland plants also have stems that bend easily in the strong winds that blow there.

Heat from the sun and heavy rains make tropical rainforests a good place for plants to grow. Since the trees grow very close together in a rainforest, they must grow very tall to reach the sunlight. Other plants have to grow or climb on the trees so that they can survive. Because too much rainfall can damage the plant, many rainforest plants have an adaptation called a drip-tip on leaves which allows the water to run.

In very dry, cold environments, known as taiga and tundra, the roots of plants grow just under the surface of the ground where they can be close to the melting snow. The trees are evergreen and do not lose their leaves (needles) during the winter. The tree trunks are also covered with thick bark to protect them during the cold winter.

Adaptations in Plants

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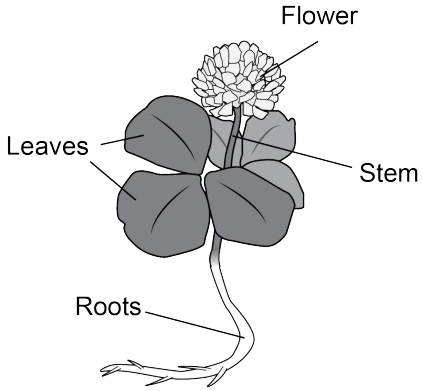

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