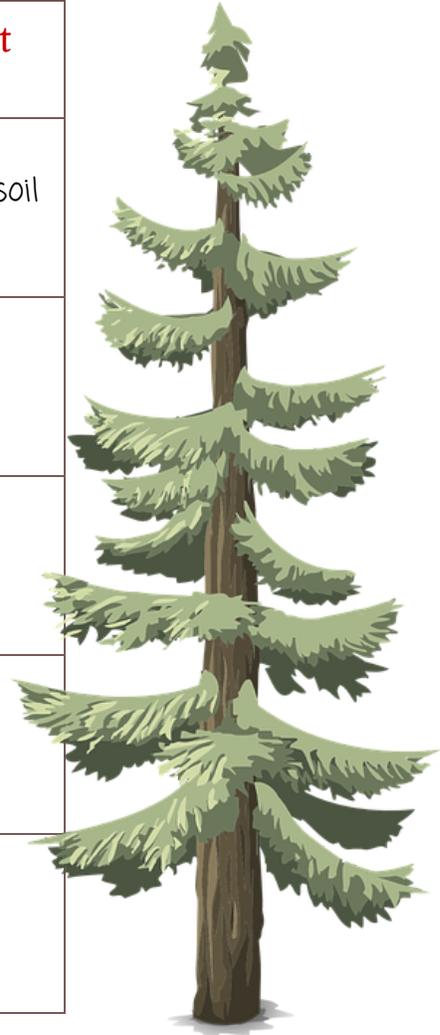


Name: _____

Plant Needs and Adaptations

Use the organizer below to list the things that plants need in order to survive. Then explain how plants meet that need. How do they access the things they need to live and grow?

What do plants need?	How do plants meet that need?
Water	Plants absorb water from the soil through their roots



Can you think of any times or places where it would be difficult for a plant to meet all of the needs you described in the chart above?

What is adaptation?

All plants have special traits that help them meet their needs and survive in their environment. These traits evolve over time in response to specific conditions, and are passed from generation to generation, in a process we call adaptation. For example, plants that grow in deserts with very little water often have traits that allow them to store water and reduce moisture loss. These adaptations help desert plants survive in harsh conditions, but they might not be beneficial to a plant in the tropical rainforest.

How are traits passed from one generation to the next?

Genes are small packets of instructions that build an organism. All living things have genes in every cell--even you! Your genes determine your traits, like your eye color and height. Genes determine a plant's traits too. Those traits might include the spines on a cactus or the ability to drop leaves in the fall. Beneficial traits give an organism an advantage--they make it easier for it to survive in its environment. Organisms that survive longer are more likely to reproduce, and when they reproduce, they pass genes to their offspring.

What adaptations would be helpful here?

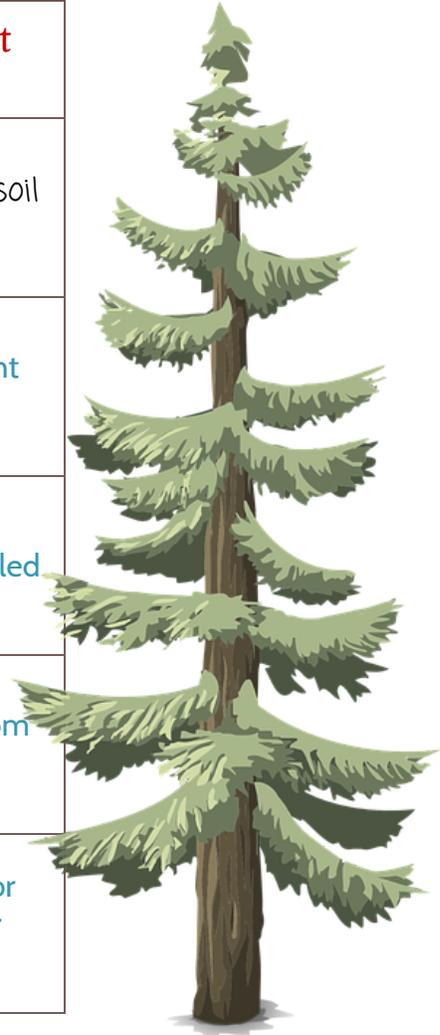
In the chart below, think about each different kind of place listed in the first column. Then in the second column, write down some ideas about adaptations that would help a plant survive there. The first one is done for you as an example.

Imagine a place that...	What kinds of adaptations would help a plant survive there?
...is very dry	Stems and leaves that can store water Roots that can get more water from the soil
...gets very cold in the winter	
...gets lots of rain every day	
...sometimes has fires	
...is very sunny	

Plant Needs and Adaptations

Use the organizer below to list the things that plants need in order to survive. Then explain how plants meet that need. How do they access the things they need to live and grow?

What do plants need?	How do plants meet that need?
Water	Plants absorb water from the soil through their roots
Sunlight	Leaves absorb energy from sunlight and use it to make sugars (food)
Air	Leaves exchange gases with the atmosphere through tiny holes called stomata
Nutrients	Plants take in mineral nutrients from the soil through their roots
Space to grow	Seed dispersal, by animals, wind, or water, allows them to grow farther away from their parent plant



Can you think of any times or places where it would be difficult for a plant to meet all of the needs you described in the chart above?

Students should think about conditions in which it would be difficult for a plant to have enough of one or more of the things it needs. For example, in a desert or during a drought, there is limited water available for plants. In urban areas where human development is widespread, there may not be a lot of space for plants to grow. A forest floor may have very little light because dense canopy trees create shade. Students will likely be able to come up with many other scenarios in which resources for plants are limited.

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...is very sunny	

Students may not know exactly what adaptations plants have evolved to survive the conditions listed on the left. That's okay! This exercise is intended to get them thinking creatively about ways that plants might cope with conditions that are not ideal for growth. During their trip to the gardens, students will have the opportunity to learn about plants that grow in each of these types of places. The class could return to this activity to compare the adaptations they saw during their field trip with the ideas they listed here.