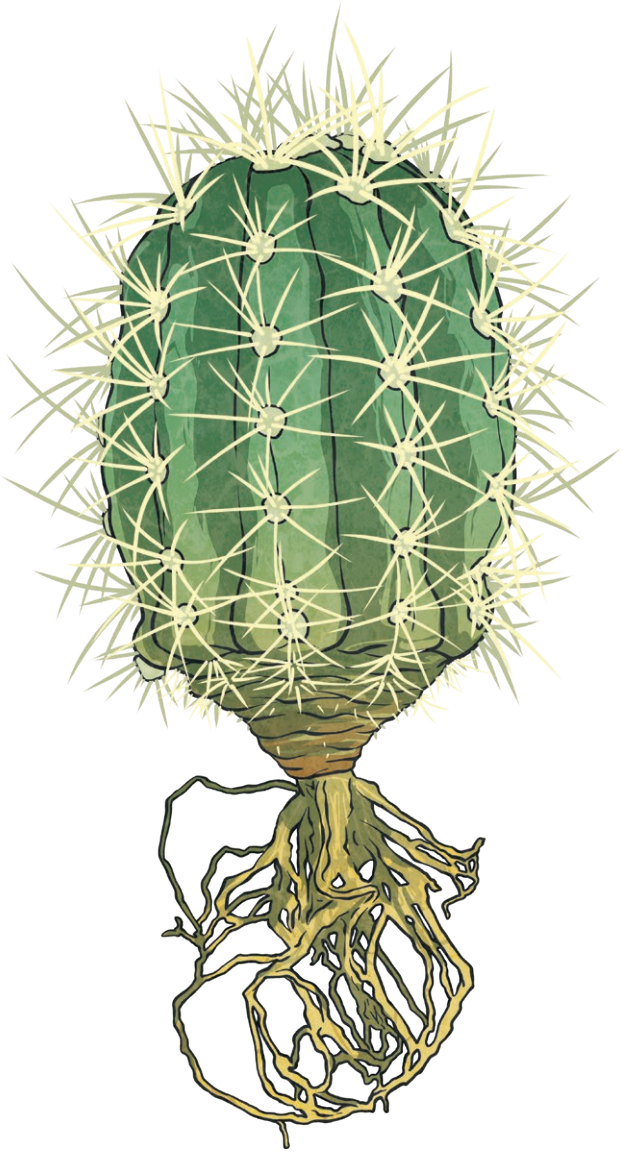
Plant Adaptation

Plants need these basic things in order to survive: sunlight, air, water, nutrients and space to grow.

In some areas of the world, some plants don't always have easy access to all of these things in their natural habitat.

Over a long, long time, plants like these have changed so that their features can allow them to survive there. This process is called adaptation.

Match the labels below to each part of the cactus to show how it has adapted to its desert environment.



Shallow roots spread wide to collect surface water.

Thick, waxy layer on the stem prevents a lot of water loss.

Thin spines and fine hairs lose less water than broad, flat leaves of other plants.

Thin spines and fine hairs absorb and reflect sunlight to keep cacti cool.

Thick stems can store water.

Plant Adaptation

Plants require these basic things in order to survive: sunlight, air, water, nutrients and space. In some areas of the world,some plants don't always have easy access to all of these things in their natural habitat. Over a long, long time, plants like these have acquired a specific set of features in order to survive there. This process is called adaptation.

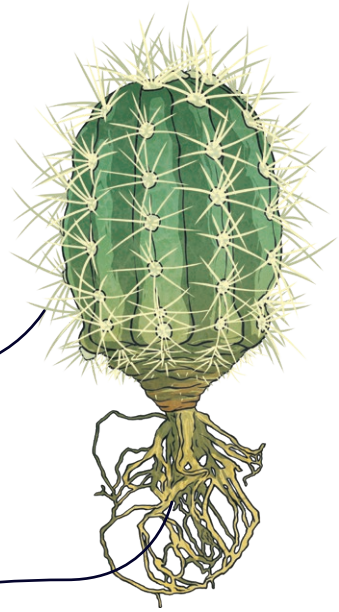
Read the information below about how cacti have adapted to their desert environment then list these adaptations in the correct sections around the cactus.

Many cacti have widespread, shallow root systems, which allow roots to collect surface water from large areas of land. However, some cacti have adapted to grow very deep roots that collect water from much deeper below the surface of the ground. Cacti stems tend to be very thick in order to store water and many cacti have adapted to use their stems for photosynthesis in order to make their own food. This is because a lot of these desert plants do not have broad, flat leaves like many other plants but rather thin spines and fine hairs, with much smaller surface areas in order to reduce water lost through evaporation. These spines and hairs also absorb and reflect sunlight in order to keep the plants cool. On the other hand, some cacti do have thick, fleshy leaves that can store water just like the stem. These leaves (and the stem too) have a waxy cuticle (top layer) to prevent excessive water loss.

Stem

Spines, Hairs and Leaves

Roots



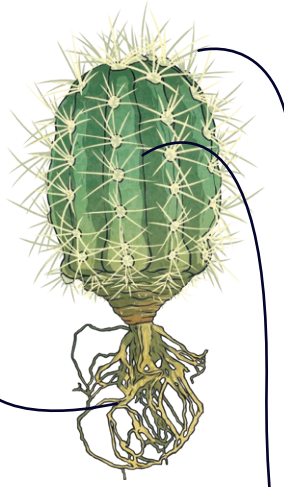
Plant Adaptation

Plants require these basic things in order to survive, grow and thrive: sunlight, carbon dioxide from the air, water, nutrients and space to grow. Some plants, in some areas of the world, don't always have easy access to all of these things in their natural habitat. Over many thousands and sometimes millions of years, plants like these have evolved to develop a specific set of features and characteristics in order to survive in these environments. This process is called adaptation.

Read the key facts about how cacti have adapted to their desert environment then write a paragraph below using full sentences to explain these adaptations.

Shallow, widespread root systems to collect surface water from large expanses of land.

Some cacti have deep roots to collect water from deep below the ground.

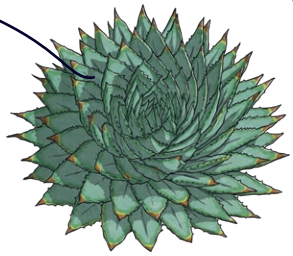


Thin spines and fine hairs with a small surface area lose less water through evaporation.

Spines and hairs absorb and reflect excessive sunlight to keep cacti cool.

Thick, fleshy leaves on some cacti store water.

Thick, waxy cuticle on leaves prevents excessive water loss.



Broad stem stores water.

Thick, waxy cuticle (outer layer) on stem helps plant to retain water.

Photosynthesis takes place in the stem due to lack of broad, flat, green leaves in many cacti.

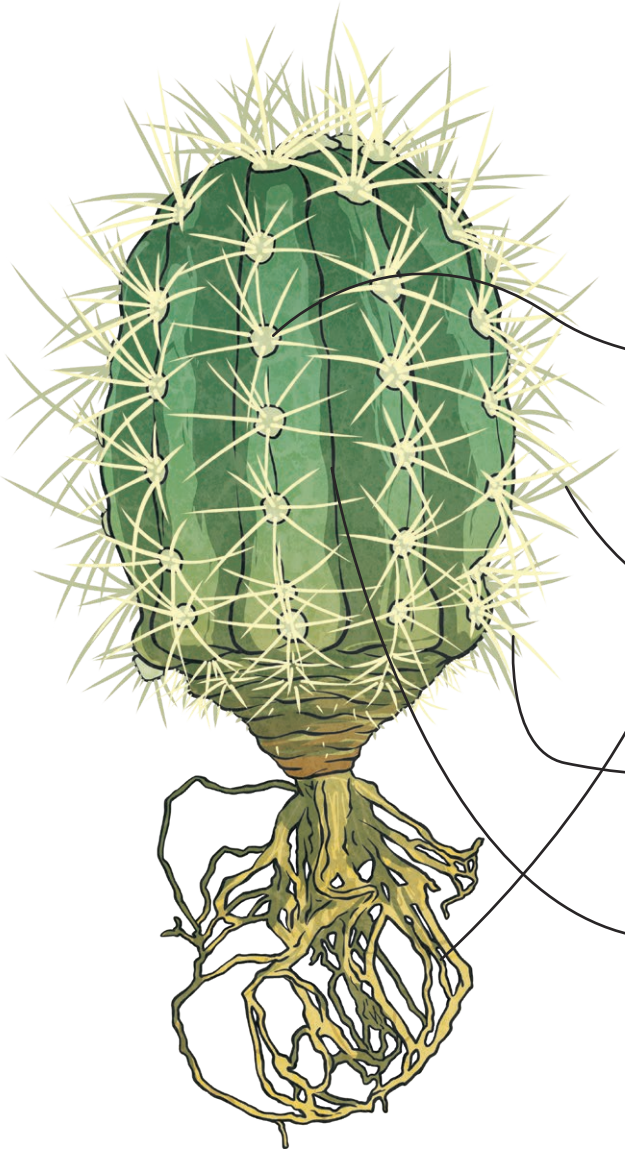
Plant Adaptation **Answers**

Plants need these basic things in order to survive: sunlight, air, water, nutrients and space to grow.

In some areas of the world,some plants don't always have easy access to all of these things in their natural habitat.

Over a long, long time, plants like these have changed so that their features can allow them to survive there. This process is called adaptation.

Match the labels below to each part of the cactus to show how it has adapted to its desert environment.



Shallow roots spread wide to collect surface water.

Thick, waxy layer on the stem prevents a lot of water loss.

Thin spines and fine hairs lose less water than broad, flat leaves of other plants.

Thin spines and fine hairs absorb and reflect sunlight to keep cacti cool.

Thick stems can store water.

Plant Adaptation **Answers**

Plants require these basic things in order to survive: sunlight, air, water, nutrients and space. In some areas of the world, some plants don't always have easy access to all of these things in their natural habitat. Over a long, long time, plants like these have acquired a specific set of features in order to survive there. This process is called adaptation.

Read the information below about how cacti have adapted to their desert environment then list these adaptations in the correct sections around the cactus.

Many cacti have widespread, shallow root systems, which allow roots to collect surface water from large areas of land. However, some cacti have adapted to grow very deep roots that collect water from much deeper below the surface of the ground. Cacti stems tend to be very thick in order to store water and many cacti have adapted to use their stems for photosynthesis in order to make their own food. This is because a lot of these desert plants do not have broad, flat leaves like many other plants but rather thin spines and fine hairs, with much smaller surface areas in order to reduce water lost through evaporation. These spines and hairs also absorb and reflect sunlight in order to keep the plants cool. On the other hand, some cacti do have thick, fleshy leaves that can store water just like the stem. These leaves (and the stem too) have a waxy cuticle (top layer) to prevent excessive water loss.

Stem

Very thick stems can store water and stems are where photosynthesis takes place.

Stems have a waxy cuticle (top layer) to prevent excessive water loss.

Spines, Hairs and Leaves

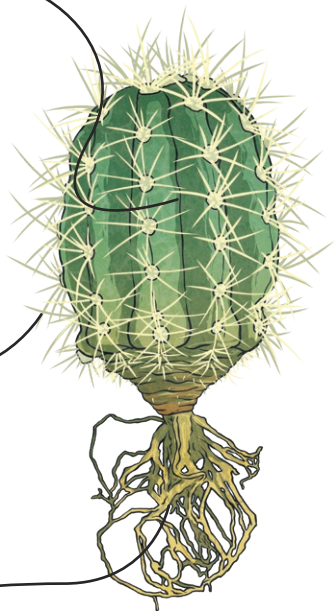
Thin spines and fine hairs lose less water through evaporation.

Spines and hairs absorb and reflect sunlight to keep cacti cool.

Some cacti have thick, fleshy leaves that can store water.

Roots

Widespread, shallow roots that collect surface water from large areas of land or deep roots that collect water from deep below the surface of the ground.



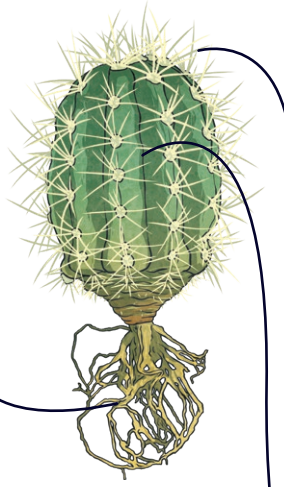
Plant Adaptation **Answers**

Plants require these basic things in order to survive, grow and thrive: sunlight, carbon dioxide from the air, water, nutrients and space to grow. Some plants, in some areas of the world, don't always have easy access to all of these things in their natural habitat. Over many thousands and sometimes millions of years, plants like these have evolved to develop a specific set of features and characteristics in order to survive in these environments. This process is called adaptation.

Read the key facts about how cacti have adapted to their desert environment then write a paragraph below using full sentences to explain these adaptations.

Shallow, widespread root systems to collect surface water from large expanses of land.

Some cacti have deep roots to collect water from deep below the ground.



Thin spines and fine hairs with a small surface area lose less water through evaporation.

Spines and hairs absorb and reflect excessive sunlight to keep cacti cool.

Thick, fleshy leaves on some cacti store water.

Thick, waxy cuticle on leaves prevents excessive water loss.

Broad stem stores water.

Thick, waxy cuticle (outer layer) on stem helps plant to retain water.

Photosynthesis takes place in the stem due to lack of broad, flat, green leaves in many cacti.

Many cacti have widespread, shallow root systems, which allow roots to collect surface water from large areas of land. However, some cacti have adapted to grow very deep roots that collect water from much deeper below the surface of the ground. Cacti stems tend to be very thick in order to store water and many cacti have adapted to use their stems for photosynthesis, to make their own food. This is because a lot of these desert plants do not have broad, flat leaves like many other plants but rather thin spines and fine hairs, with much smaller surface areas in order to reduce water lost through evaporation. These spines and hairs also absorb and reflect sunlight in order to keep the plants cool. On the other hand, some cacti do have thick, fleshy leaves that can store water just like the stem. These leaves (and the stem too) have a waxy cuticle (top layer) to prevent excessive water loss.