WORKBOOK
At the Root of It
Look at the picture and write answers in your own words.

At the Root of It

What do roots do?

What kinds of shapes of roots do you know? Draw the shapes briefly.

What roots do not need soil?

What roots can you eat?

Do you know any interesting facts about roots? If so, write about it.

Write the correct word from the Word Bank next to the definition.

[ Word Bank ]

- minerals
- nutrients
- grip
- root
- creep
- pebble
- minerals
- nutrients
- root
- pebble

1. to move in a quiet, careful way, especially to avoid attracting attention
   - creep

2. to hold something very tightly
   - grip

3. anything needed by living things to live and grow
   - nutrients

4. substances in the soil that plants need to grow
   - minerals

5. the part of a plant or tree that grows under the ground and gets water from the soil
   - root

6. a small smooth stone found especially on a beach or on the bottom of a river
   - pebble

Circle the synonyms of the underlined words.

1. Most roots grow down and spread out under the soil.
   - threaten
   - extend
   - shrink
   - big

2. Some roots are long and skinny.
   - fat
   - big
   - thin
   - huge
Read the paragraph and circle the answers.

A tree has a trunk, branches and thousands of leaves. These are only some parts of the tree. It also has many roots hidden _______ the ground. Most roots grow down and spread out under the soil. In fact, a tree’s roots can spread out four times further than its branches.

1. What is the paragraph about?
   ① trees   ② roots   ③ carrots   ④ how plants grow

2. What word goes in the blank?
   ① over   ② on   ③ under   ④ behind

Read the passage and circle the answers.

1. Dampen a paper towel.
2. Put the towel in an uncovered glass jar.
3. Place the seed against the side of the jar.
4. Watch what happens after a few days.

1. What are the procedures for?
   ① to see when a plant grows
   ② to see how a plant grows
   ③ to see why a plant grows
   ④ to see what plants grow

2. How will the roots grow?
   ① The roots will grow up.
   ② The roots will grow down.
   ③ The roots will grow sideways.
   ④ The roots will not grow.

Circle the answer.

1. Which is true about roots?
   ① All roots are long and skinny.
   ② Roots take in the water that plants need to live and grow.
   ③ Roots are weak and fragile.
   ④ Roots cannot push through hard surfaces.

2. Read the sentence and circle the word that goes in the blank.

   Roots can push through hard surfaces because of their root __________, or root tips.

   ① mouth   ② hair   ③ cap   ④ finger

Look at the picture and write answers.

1. Which part of the root takes in water and minerals that plants need to live and grow?
   root hair

2. Which part of the root does the water travel through to every leaf of the plant?
   tube

3. Which part of the root weaves around objects and pushes their way through rocks and soil?
   root cap
Complete the word puzzle from the Word Bank.

Across
1. to get something that previously belonged to others
2. to take in liquid from the surface or space around something
3. small stones, used to make a surface for paths or roads
4. a large area of land where it is always very hot and dry, and there is a lot of sand

Down
1. a desert plant with sharp points
2. a small animal or insect that destroys crops or food supplies
3. the top layer of an area of water or land
4. to help someone
5. the area of land where there are flowers, grass and other plants
6. a net of thin threads made by a spider

Plants have different kinds of roots, depending on (1) ________________. Some plants grow where there is plenty of water. Their roots are usually short and near the surface of the ground. Plants that live in dry places, like the desert, need (2) _______________ roots. Their long roots can stretch in a wide circle or dig deep down in the soil to find water.

Read the paragraph and circle the answer.

1. What is the main idea of the paragraph?
   - Plants have different kinds of root.
   - Roots are usually short and fat.
   - Plants have different kinds of fruit.
   - Roots absorb water through their tub.

2. What phrase might fit in (1)?
   - why they live
   - where they live and how much water they need
   - what lives around them
   - where they move and how much water they need

3. What word goes in (2)?
   - shorter
   - thinner
   - fatter
   - longer

4. Why do plants that live in dry places need long roots?
   - Because they can push through concrete footpaths.
   - Because they can hold plants in the soil.
   - Because they can dig to deep down in the soil to find water.
   - Because they can hold up trees as tall as buildings.

5. What is the synonym of the underlined word?
   - threaten
   - break
   - shrink
   - spread
Write the correct answer from the Word Bank.

[ Word Bank ]

cactus  carrot  palm tree

1. Which has a tap root?  carrot

2. Which has fibrous roots? And why does it need a fibrous root?  palm tree, Because palm trees need extra support to help the stand. And a strong web of fibrous roots help keep palm trees standing tall.

3. Which has a tap root and fibrous roots at the same time? And why does it need both?  cactus, Because these roots help the cactus absorb water in such a dry land like a desert.

Circle the answer.

1. What roots go straight down into the soil?  ① root caps  ② fibrous roots  ③ tap roots  ④ root hairs

2. Which is true about fibrous roots?  ① They can go deep into the soil.  ② They spread out in all directions.  ③ They are usually just on the soil.  ④ They cannot capture water for plants.

Read the paragraph and circle the answer.

Not all roots grow in soil. Some roots grow underwater. Water hyacinths float on top of ponds. Their fibrous roots sit below the surface of the water. Water hyacinth roots are thin and feather-like.

1. What is the best title for the paragraph?  ① How Roots Absorb Water  ② Why Do Roots Have Different Shapes?  ③ Roots without Soil  ④ Why Do Roots Absorb Water?

2. Why are water hyacinth roots short and feather-like?  ① Because they do not have to push through hard objects.  ② Because they do not have to add nutrients to roots.  ③ Because they do not have to grow far in search of water.  ④ Because they do not have to grow quickly.

3. Why are water hyacinth roots thin?  ① Because they do not have to hold the plant in place.  ② Because they do not have to add nutrients to roots.  ③ Because they do not have to grow quickly.  ④ Because they do not have to grow far in search of water.

Circle the answer.

1. What do you call the way of growing plants without soil?  ① watering  ② hydroponics  ③ capturing  ④ gardening

2. Which is true about plants?  ① They don’t need to add nutrients where the roots are growing.  ② They don’t need to be in soil as long as they have nutrients.  ③ Plants that are grown using hydroponics grow very slowly.  ④ Many plants cannot grow at one time.
Fill in the blanks with the correct words from the Word Bank.

[ Word Bank ]

destroyed  
dig  
pretty  
cling  
soak  
store  
tie  
straight

1. People often _________ their boats to mangrove trees when a storm is on the way.

2. One storm in Darwin, Australia, _________ almost every boat in the Darwin harbor.

3. Pillar roots grow _______ down from tree branches. They help the tree to grow over a wider area.

4. Their aerial roots _________ tightly to tree branches and absorb water from dew and rain.

5. They swell up and _________ water and food. Then in dry spells of weather, the plant uses the stored food and water.

6. Animals such as badgers, wombats and rabbits often _________ burrows underneath tree roots.

7. The roots also _________ up rainwater, helping the animal homes stay warm and dry.

8. Roots may not be as _________ as flowers and leaves, but they are a very important part of plants.

Circle the answer.

1. Which is true about mangrove trees?
   ① They grow in thick, wet mud.
   ② Their fibrous roots help the mangroves stand in wet soil.
   ③ They grow in dry sand like desert.
   ④ Their tap roots help the mangroves get the air they need.

2. Why do mangrove trees need big, curved buttress roots and thin, arched prop roots?
   ① Because they can grow far in search of water.
   ② Because they help the mangroves stand in wet, shifting soil.
   ③ Because they help the mangroves stand in big storm.
   ④ Because they can absorb all the available water.

3. What do you call some plants that live up in trees or on top rocks?
   ① buttress roots ② knee roots ③ still roots ④ epiphytes

Write the correct answer from the Word Bank.

[ Word Bank ]

pillar roots  |  stilt roots  |  aerial roots

1. Which grow out and downwards from tree trunks like legs and help plants stay in soil that is very thin?
   _________

2. Which grow straight down from the branches and help the tree to grow over a wider area?
   _________

3. Which cling tightly to tree branches and absorb water from dew and rain?
   _________
Read the paragraph and circle the answer.

Plants are not the only things that rely on roots to grow healthy and strong. People do too. Carrots, parsnips, turnips, radishes and beets are all roots that we eat. They are ________ roots. They swell up and store water and food. Then, in dry spells of weather, the plant uses the stored water and food.

1. What is the paragraph about?
   ① roots we can eat  \  ② branches we can eat
   ③ leaves we can eat  \  ④ plants that store water

2. What word goes in the blank?
   ① fibrous  \  ② stilt  \  ③ tap  \  ④ aerial

Look at the picture and mark(✓) on Yes or No.

1. Bulbs look like roots, but they are actually leaves and stems that grow underground.  Yes ✓ No ☐
2. The roots grow down from the bulb to get food from the soil.  Yes ✓ No ☐
3. A tuber also looks like a root. But it is an underground leaf.  Yes ☐ No ✓

Final Test (1)

1. Read the paragraph and fill in the blank with the correct word.

   They creep along silently under the ground. They can grab onto rocks or bark and grip like glue. They hold up the biggest trees and the smallest sprouts. Some of them feed us. Can you guess what they are? They are ________.

2. What parts of roots branch out through the soil and take in water and minerals?
   ① buttercup roots  \  ② root hairs
   ③ root caps  \  ④ tubes

3. Which is true about fibrous roots?
   ① Carrots have fibrous roots.
   ② They go straight down into the soil.
   ③ Most grasses and some flowers have fibrous roots.
   ④ Some desert plants have fibrous roots.

4. Reread Book page 6 and write about what would happen to the trees if they did not have roots.
   **Trees could be blown away by wind. Or other roots could be washed away by rain.**

5. Reread Book page 7 and write about root caps in your own words.
   **Trees can push through hard surfaces because of their root caps. They grow quickly. They weave around objects and push their way through rocks and soil. They even creep inside the cracks of rocks, as they grow bigger, they push apart the rocks.**
Write three adjectives that can describe the nouns below.

1. house
2. monster
3. cloud
4. root
5. flowers
6. car

Put the words in the right order. Put ‘.’ at the end of each sentence.

Example: book : thick, interesting, good

1. The, has, two, humps, camel
   → The camel has two humps.
2. dog, My, a, black, has, nose
   → My dog has a black nose.
3. I, to, school, go, on, a, bus, yellow
   → I go to school on a yellow bus.
4. The, four, shelf, has, books
   → The shelf has four books.
Circle the correct adjective to complete the sentences.

1. Roots have very (important, difficult) tasks. Roots act as anchors and hold plants in the soil.
2. Roots can push through (smooth, hard) surfaces because of their root caps.
3. Their (long, hard) roots can stretch in a wide circle or dig deep down in the soil to find water.
4. Some plants have one (pretty, large) main root that goes straight down into the soil.

Fill in the blanks with correct adjectives from the Word Bank.

[ Word Bank ]

| tiny | dry | two | strong |

1. Plants that live in ______________ places, like the desert, need longer roots.
2. Only ______________ boats were saved. These boats were safely tucked away among the mangrove trees.
3. Palm trees have a ______________ web of fibrous roots. The thick web of roots helps keep these trees standing tall.
4. The ______________ roots called root hairs branch out through the soil. They take in water and minerals.

Compare and contrast the plants that need soil and that do not need soil. Complete the chart below.

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<thead>
<tr>
<th>What plants need soil?</th>
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<th>What plants do not need soil?</th>
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<th>What is common between the plants that need soil and that do not need soil?</th>
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<th>What is different between the plants that need soil and that do not need soil?</th>
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Write paragraphs using the information that you answered above.

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________
Listen to the sentence and fill in the blanks.

1. Roots __come__ in all shapes and sizes.
2. Roots act as __anchors__ and hold plants in the soil.
3. Many garden plants and flowers have __tap__ roots.
4. Plants do not need to be in soil as long as they have __nutrients__.
5. The roots also soak up __rainwater__, helping the animal homes stay __warm__ and dry.

Listen to the paragraph and fill in the blanks.

6. They creep along silently under the __ground___. They can __grab__, onto rocks or __bark__, and __grip__ like glue. They hold up the biggest trees and the smallest __sprouts__. Some of them __feed__ us. Can you guess what they are?
7. Roots can push through hard __surfaces__ because of their root caps, or root __tips___. The root __caps__ grow quickly. They __weave__ around objects and push their way through rocks and soil.
8. __Desert__ plants grow in the driest places on Earth. Their roots must absorb every drop of water they can find. Some desert plants, such as the saguaro __cactus__, have __both__ a deep tap root and __thick__ mats of __fibrous__ roots that spread far beyond the plant.
9. Carrots, parsnips, __turnips__, __radishes__ and beets are all roots that we eat. They are tap roots. They __swell__ up and __store__ water and food. Then, in dry spells of weather, the plant __uses__ the stored food and water.
10. Roots may not be as pretty as flowers and __leaves__, but they are a very important __part__ of plants. They help __plants__ get water and nutrients. They store food. They grip the __soil__ and keep plants in one place. They __grow__ in air and water. They break through __rocks__ in the soil.