



Roots and Shoots

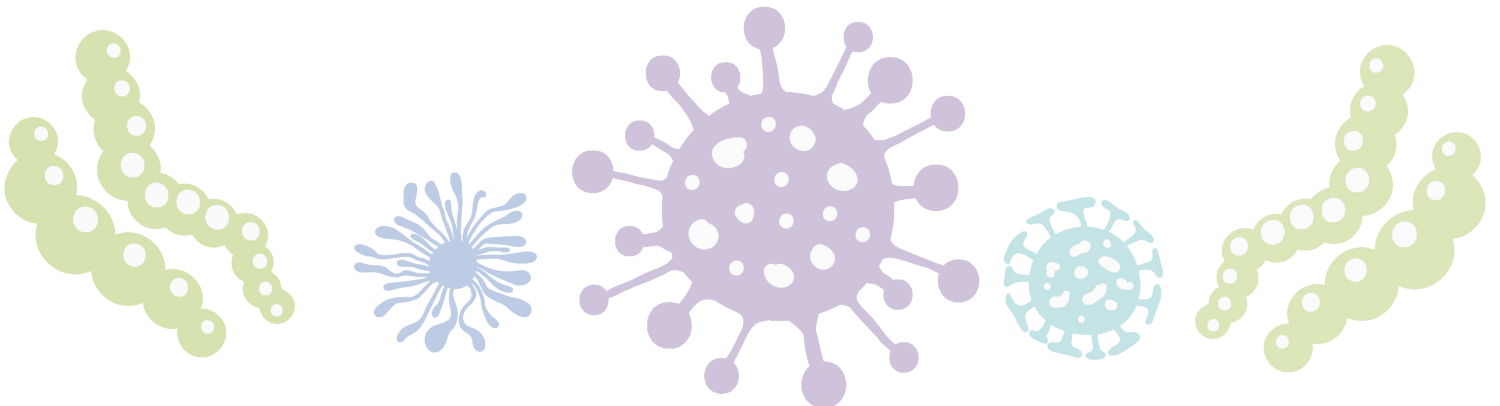
What allows a plant to get water from the ground? What allows the food made in plant leaves to get all around a plant? The answer is found in two important organs: stems and roots.

Recommended Reading

 *Plant Parts*, by Richard and Louis Spilsbury, p. 30-39

 *Tops and Bottoms*, by Janet Stevens

 *The Tree Book: For Kids and their Grown Ups*, by Gina Ingoglia, p. 8-9; 18-21





ACTIVITY **Traveling Water**

Plants need water for survival. Roots pull water from the ground and it's transported up through the stems. Tiny tubes are all throughout the plant, called xylem which move the water. It's usually hard to see how that water moves, but with this activity you'll have a chance to see how it works in action!

SUPPLY LIST

- 2 white carnations
- 3 cups
- Food coloring
- Sharp knife (be sure an adult helps with this!)

INSTRUCTIONS

1. Fill all 3 cups $\frac{3}{4}$ of the way with water and add enough food coloring to each cup to get a nice vibrant color. Use a different color in each cup.
2. Cut 2 inches off the bottom of each carnation. Then, slice one of the carnation stems lengthwise straight down the middle from the bottom to about halfway up the stem. Be sure to get an adult's help with cutting!
3. Place the carnation that does not have a split stem in one cup of water. Place each half of the cut carnation's stem in different colors of water.
4. Wait until the next day to observe your results.
5. Record your observations on the next page.

Reminder!

Be sure to continue caring for and monitoring your bean plant. How is it doing? Take the time to sketch what it looks like and record it's height.

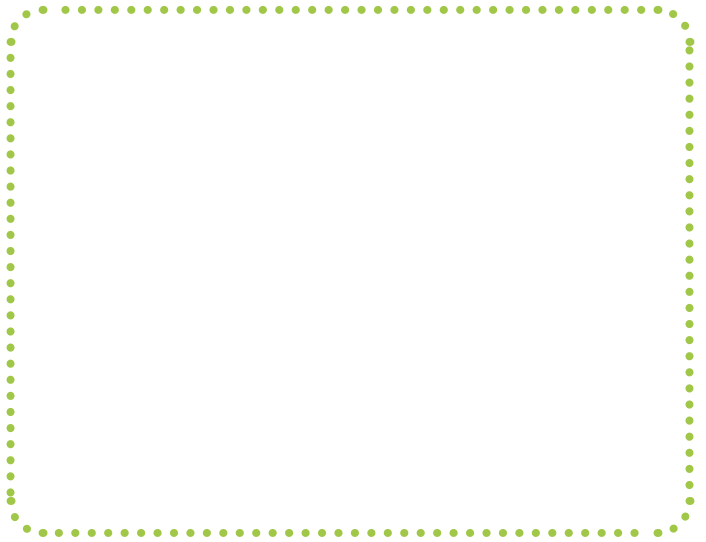
Watching Water Travel Observations

Sketch each of your flowers below. Be sure to use a colored pencil or crayon to show what each flower looks like at the end of your observation.

Split Carnation



Whole Carnation

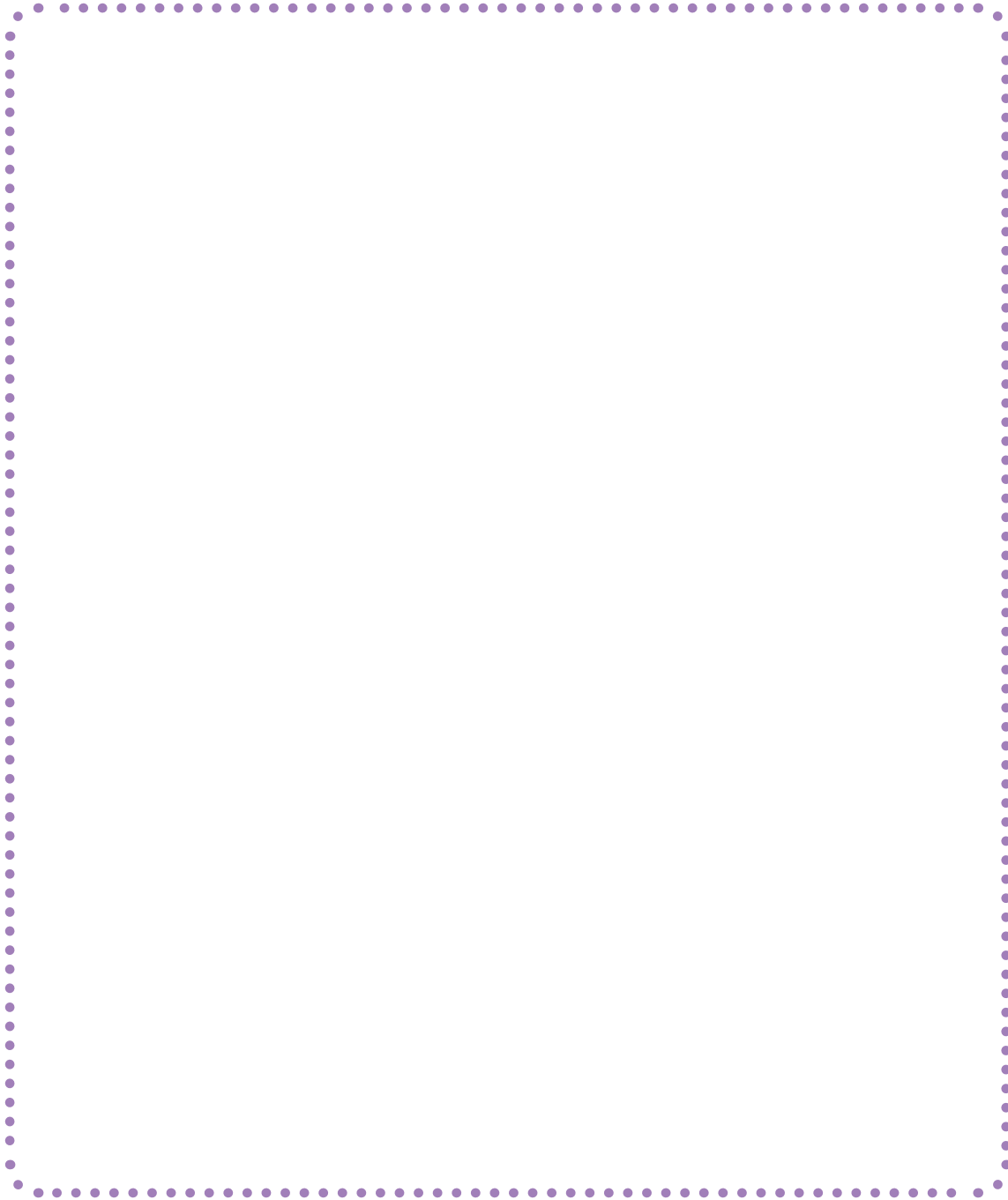


QUESTIONS:

Are the two colors in the split carnation split or mixed throughout?

Given your observations, do you think the xylem tubes flow all throughout the flower or go straight up?

SKETCH YOUR BEAN PLANT



How many days since your bean was planted? _____

How tall is your bean plant? _____



LESSON 13: PSALM 1:3

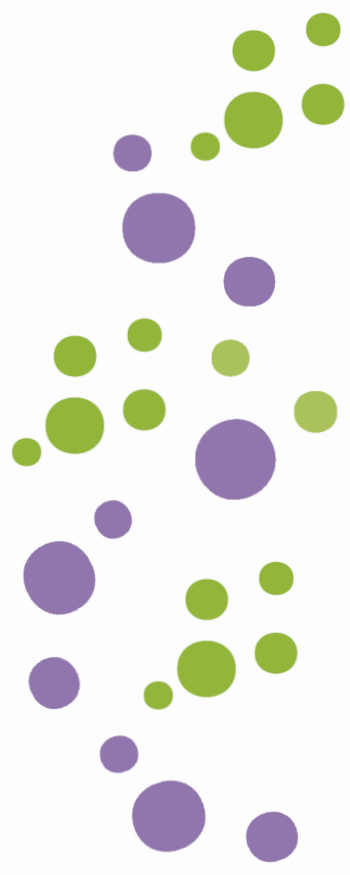
He is like a tree planted by streams

of water that yields its fruit in its

season, and its leaf does not wither.

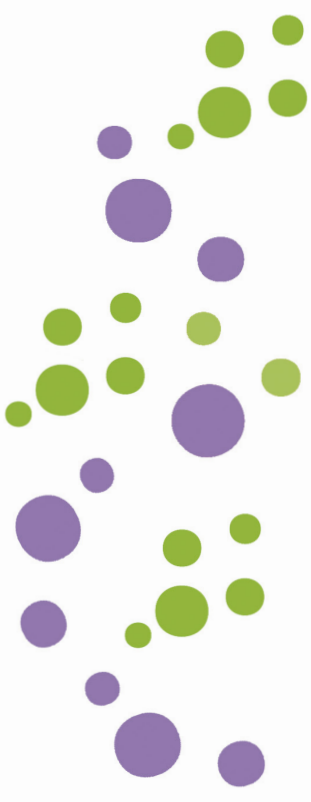
In all that he does, he prospers.

Four sets of handwriting practice lines, each consisting of a solid top line, a dashed middle line, and a solid bottom line.



LESSON 13: PSALM 1:3

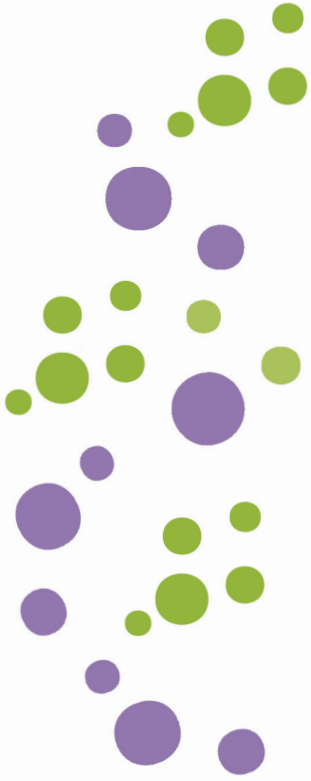
Handwriting practice lines consisting of 10 rows. Each row is defined by three horizontal lines: a solid top line, a dashed middle line, and a solid bottom line.



LESSON 13: PSALM 1:3

He is like a tree planted by the streams of water
that yields its fruit in its season, and its leaf does
not wither. In all that he does, he prospers.

Four sets of horizontal lines for handwriting practice, each consisting of a solid top line, a dashed middle line, and a solid bottom line.



LESSON 13: PSALM 1:3

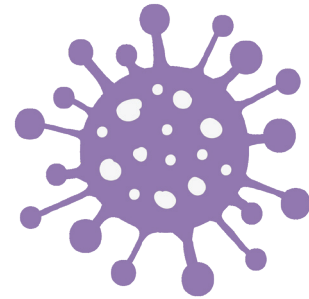
Handwriting practice lines consisting of six sets of three horizontal lines (top solid, middle dashed, bottom solid).

QUESTION:

What organ transports water, nutrients, and food around a plant?

ANSWER:

Stem

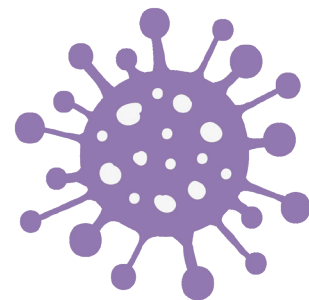


QUESTION:

What organ collects water and nutrients for a plant?

ANSWER:

Roots

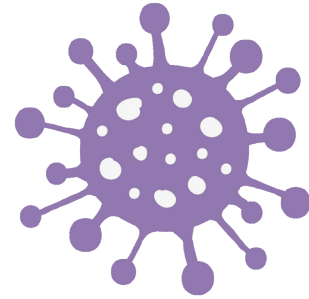


QUESTION:

In a stem, what transports nutrients and water from the roots up to the leaves?

ANSWER:

Xylem

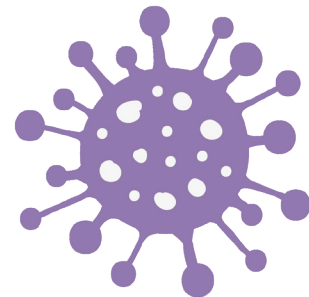


QUESTION:

In a stem, what transports food made in the leaves down to the roots?

ANSWER:

Phloem

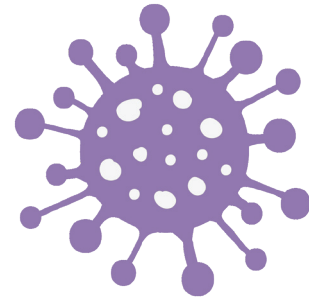


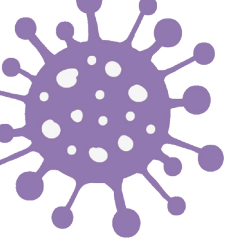
QUESTION:

What are the two types of roots?

ANSWER:

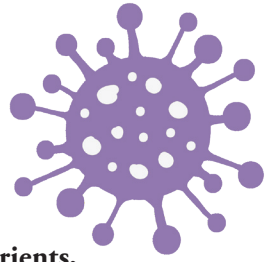
Taproots and fibrous roots





Roots and Shoots

Lesson 13 Quiz



- 1. Plant stems function to support the leaves and flowers of the plant, as well as carry water, nutrients, and food to different parts of the plant.**
 - A) True
 - B) False
- 2. Some plants store food in their stems, such as potato and asparagus plants.**
 - A) True
 - B) False
- 3. Stems, sometimes called shoots, and are typically found growing:**
 - A) In trees
 - B) Above ground
 - C) Below ground
- 4. Xylem tissue carries nutrients and water from the root to the leaves for:**
 - A) Gas exchange
 - B) Photosynthesis
 - C) Food absorption
- 5. Phloem tissue carries the food created by photosynthesis in the leaves down to the:**
 - A) Flowers
 - B) Stem
 - C) Roots
- 6. Roots function to anchor the plant, collect water and nutrients for the plant, and sometimes:**
 - A) Store food for the plant
 - B) Borrow nutrients from other plants
 - C) Grow flowers
- 7. Taproots grow deep into the soil and typically the type of root to:**
 - A) Consume energy
 - B) Be a tangled mass
 - C) Store food
- 8. Fibrous roots have lots of branching roots that form a pattern in the soil.**
 - A) True
 - B) False

