

Water-Themed Lessons & Activities

from **FAIRMOUNT WATER WORKS**

Measuring a Tree Activity - About Trees

Introduction:

Trees provide shade, help filter and moisturize the air, create beauty and are an important tool to reduce stormwater runoff by slowing rainwater so it will soak into the ground. Trees then take up the water and release much of it through their leaves back into the air. Reducing runoff improves the quality of our source water. Students will take on the role of landscape planners and foresters as they measure crown spread, circumference, and the diameter of a tree.

Note: This activity requires access to a tree.

Learning Objectives:

Students will be able to

- **Measure** crown spread, circumference, and the diameter of a tree.
- **Explore** the function of stem flow.

Materials:

- Clipboard, pencil, calculator, chalk
- Measuring tape - (or string, paper clips, ruler)
- Another person to help or 2 objects you can place on the ground to act as a marker.
- 2 equal cups of water

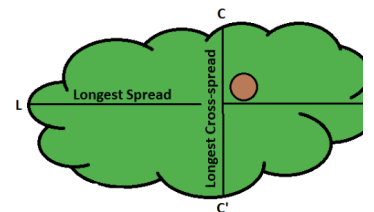
Activity Procedure:

1. Crown spread is a measure of the footprint of the crown of the tree expressed as a diameter.
 - Measure the longest and shortest extent of the crown of the tree to get average crown spread. Crown spread is taken independent of trunk position. Measure to the tips of the limbs.

Tree Crown: _____ (L) + _____ (C) / 2 = _____ average diameter

- If you do not have another person to hold one end of the measuring tape, lay an object (i.e. a bright plastic lid) to mark where you will begin your measurement. Go to the other end of the tree crown and lay down a second marker. Now measure between the markers and repeat for your second measurement.

(If you do not have a measuring tape, you can take a string at least 25 feet long, Mark off the tree measurement with a paper clip and then use a ruler or yardstick to measure the string.)

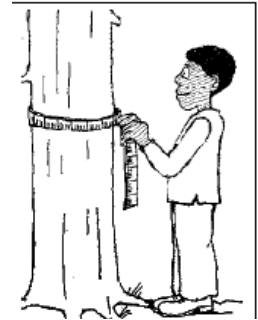
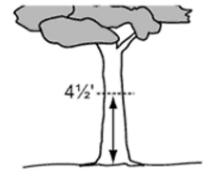


2. Measure Circumference. Measure 4-1/2 ft (1.35 meters) from the ground up the trunk and mark with chalk.

3. Wrap the measuring tape around the trunk at your chalk mark (1.35 meters or 4-1/2 ft). Read the distance around the trunk off the tape and record it. Make sure the tape is level.

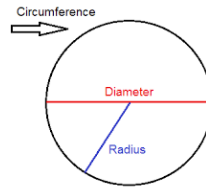
_____ (record, noting feet or meters)

4. The diameter equals the measured circumference divided by pi ($\pi = 3.14$).



$$\text{Diameter} = \frac{\text{Circumference}}{3.14}$$

$$\text{Diameter} = \underline{\hspace{2cm}}$$



5. At chin level pour a cup of water on the ground. At chin level throw a cup of water against a tree trunk. Notice the difference and you will understand stem flow. The slower the water hits the ground the better chance it will infiltrate, not runoff. Look up at the canopy and see how all those branches connected to the trunk will slow the path of rain.

Suggested Age Level: 5th - 9th

Suggested Subject Area (s): Environmental Studies / Biology / Math