

Answer Key For Discussion Questions

Group 1: Dry Soil Investigation

1. In what ways are the two soil types similar? How are they different?
 - a. *Potting soil and local soil are similar in that they both contain organic and inorganic materials. Organic materials come from plant and animal sources as well as from bacteria and other microorganisms too small to be seen without a microscope. Both soils also contain inorganic particles that vary in size. The two soils differ in the relative amounts of organic and inorganic materials. Often, the potting soil will have more organic material than the local soil. The local soil often contains small pebbles and rocks not found in the potting soil.*
2. Can you tell by visual inspection how well a soil will support plant growth? Why or why not?
 - a. *Generally, we cannot tell how well a soil will support plant growth by visual inspection alone. Although we may be able to see organic material and clay that help support plant growth, it is not possible to see how many of the essential nutrients are present or in what concentration they are found.*

Group 2: Soil and Air Space

1. Why did the final water level differ among the three types of soil?
 - a. *The different soil types contained varying amounts of air space within them. The potting soil has about 50 percent air space, while the sand has much less. The local soil most likely has less air space than the potting soil, but more than the sand. As water enters the soil, it occupies the spaces previously taken up by air. This means that the more air space in the soil, the more water is taken up, and the lower the observed water level.*
2. Why is it important for plant growth that soils contain air space?
 - a. *The air space provides room for the soil to hold water and dissolved nutrients needed by the plant. The air also provides oxygen, which is needed by the roots of all plants and most (but not all!) microorganisms that live in the soil.*

Group 3: Soil and Water

1. Infiltration refers to the ability of soil to accept water. Which of the soils you tested accepted the most water?
 - a. *The potting soil and sand likely accepted the most water, with the local soil accepting a lesser amount.*
2. Percolation refers to the ability of soil to transmit water throughout its depth. Which of the soils you tested allowed for the fastest water movement? Which allowed water to reach the greatest depth?
 - a. *Water should have been transmitted most quickly through the potting soil. Sand most likely transmits water at the slowest rate, while the local soil transmits water at a rate between that of the potting soil and the sand.*