

Characteristics of Seed Plants

By Cindy Grigg

¹ All seed plants share two characteristics. They have vascular tissue and use seeds to reproduce. In addition, they all have body plans that include leaves, stems, and roots. Most seed plants live on land. Seed plants face many challenges, including standing upright and supplying all their cells with water and food. They meet these two challenges with vascular tissue. The thick walls of the cells in the vascular tissue help support the plants. In addition, water, food, and nutrients are transported throughout the plants in vascular tissue.



² There are two types of vascular tissue. **Phloem** (FLOH um) is the vascular tissue through which food moves. When food is made in the plant's leaves, it enters the phloem and travels to the plant's stems and roots. Water and nutrients, on the other hand, travel in the vascular tissue called **xylem** (ZY lum). The plant's roots absorb water and nutrients from the soil. These materials enter the root's xylem and move upward into the plant's stems and leaves.

³ Seeds are structures that contain a young plant inside a protective coating. One reason why seed plants are so numerous is that they produce seeds. Seed plants do not need water in their environment to reproduce like seedless plants do. Even though different kinds of seeds look different from each other, they all have a similar structure. A seed has three important parts: an embryo, stored food, and a seed coat.

⁴ The young plant that develops from the fertilized egg is called the embryo. The embryo already has the beginnings of roots, stems, and leaves. In the seeds of most plants, the embryo stops growing when it is quite small. When the embryo begins to grow again, it uses the food stored in the seed until it can make its food. In some plants, food is stored inside one or two seed leaves called cotyledons (kaht uh LEED unz).

⁵ The outer covering of a seed is the seed coat. Some familiar seed coats are the "skins" on lima beans, peanuts, and peas. The seed coat protects the embryo and its stored food from drying out. This allows a seed to remain inactive for a long time.

⁶ To develop into a new plant, a seed needs light, water, and nutrients. After seeds have formed on a plant, they are usually scattered by wind, animals, or water. When seeds land in a suitable area, they can sprout, or begin to grow.

⁷ Seeds that travel far away from the parent plant have a better chance of survival. This is because the young plants do not have to compete with the parent plant for light, water, and nutrients as they begin to grow.

⁸ Germination (jur muh NAY shun) is the early growth stage of the embryo. Germination begins when the seed absorbs water from the environment. Then the embryo uses its stored food to begin to grow. First, the embryo's roots grow downward, and then its leaves and stem grow upward.

Name _____

Date _____

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<p>1. What are the two characteristics of seed plants?</p> <p>_____</p> <p>_____</p>	<p>2. Vascular tissue gives the plant support and has what other function?</p> <p><input type="radio"/> A Transports water, food, and nutrients throughout the plant</p> <p><input type="radio"/> B Pumps blood</p> <p><input type="radio"/> C Takes in carbon dioxide and gives off oxygen</p>
<p>3. What are the two different types of vascular tissue?</p> <p>_____</p> <p>_____</p>	<p>4. What does phloem do?</p> <p><input type="radio"/> A Helps the plant float.</p> <p><input type="radio"/> B Moves water and nutrients up through the roots to the stems and leaves.</p> <p><input type="radio"/> C Moves food from the plant's leaves down to the stems and roots.</p>
<p>5. What does xylem do?</p> <p><input type="radio"/> A Moves food from the plant's leaves down to the stems and roots.</p> <p><input type="radio"/> B Helps the plant float.</p> <p><input type="radio"/> C Moves water and nutrients up through the roots to the stems and leaves.</p>	<p>6. A seed has three important parts. Name them.</p> <p>_____</p> <p>_____</p>
<p>7. What are cotyledons?</p> <p><input type="radio"/> A The hard outer covering of the seed</p> <p><input type="radio"/> B Seed leaves containing stored food</p> <p><input type="radio"/> C The embryo of the tiny new plant</p>	<p>8. What is the purpose of the seed coat?</p> <p><input type="radio"/> A Protection from drying out</p> <p><input type="radio"/> B Provides stored food</p> <p><input type="radio"/> C To keep the embryo inside the seed</p>