Monocots, Dicots and Vascular Bundles

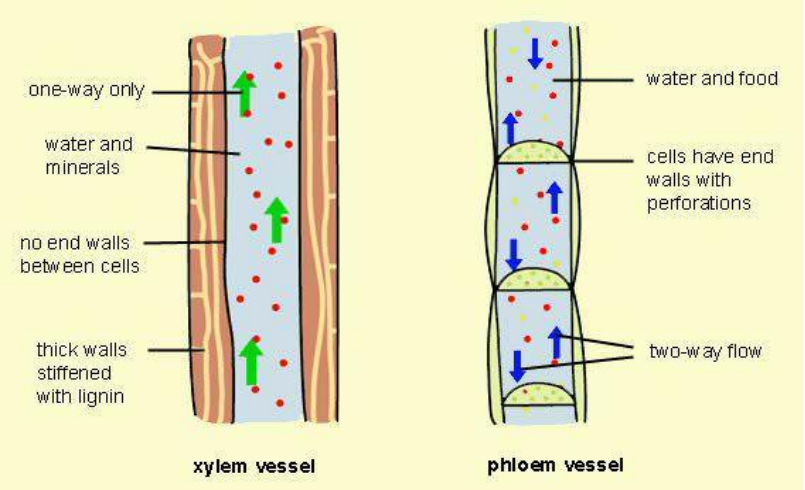
All flowering plants are divided into two classes called monocotyledons (monocots) and dicotyledons (dicots). This is based on the number of leaves that grow when the seed first sprouts. These are not true leaves but parts of the embryo that can use the starch stored in the seed while the plant grows large enough to have real photosynthetic leaves.

Orchids, grasses, wheat, and rice are **herbaceous** or soft stemmed monocots. Bamboo, palms and sugar cane are **woody** or tough stemmed monocots. Herbaceous dicots include potatoes, squash, salad greens and legumes. The woody dicots include common trees and shrubs like maples, oaks and roses.

Angiosperms all have the same plant parts but they are differently organized. The roots, stems and leaves are different because of the vascular bundle patterns are different.

Vascular Bundles

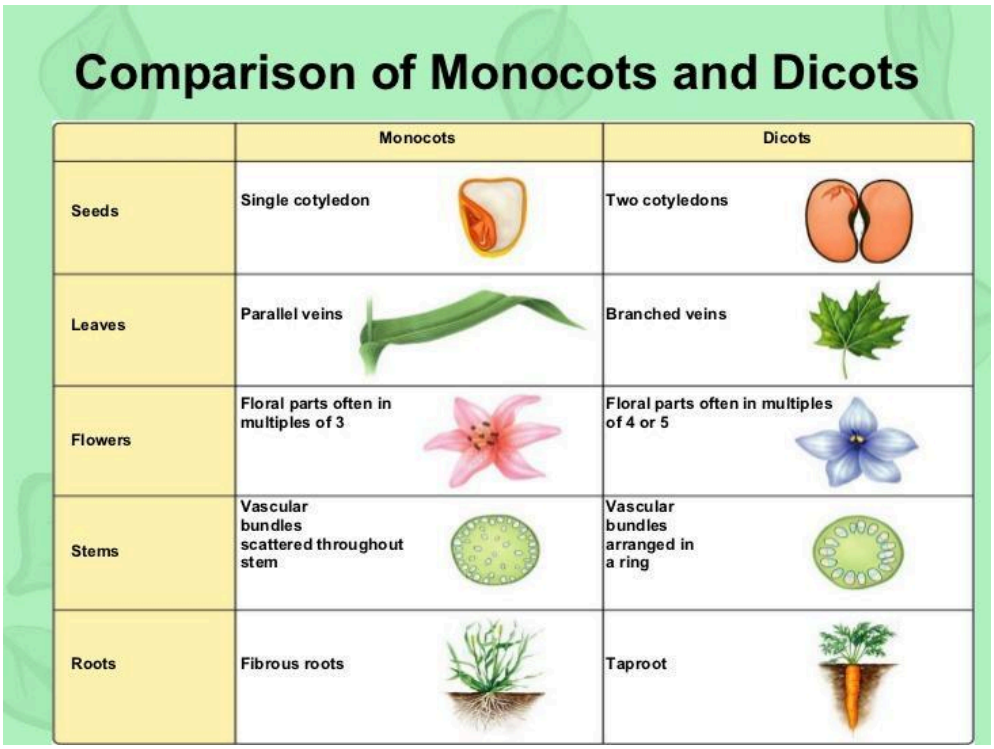
All ferns, gymnosperms and angiosperms have vascular bundles. There are two types of vessels in a vascular bundle, xylem and phloem. Water and dissolved minerals are carried by xylem from the roots up the stems to leaves and flowers. Phloem carries sugars between plant cells.



Xylem is formed from long tracheids that are dead cells. Water moves into xylem in the roots from the soil by osmosis. Water evaporates from the leaves by a process called transpiration, and this pulls more water up the xylem. Phloem is formed from sieve tube elements that are living cells. Sugar dissolved in water is moved both up and down the plant by a process called translocation.

Comparing Monocots and Dicots

Monocot roots are fibrous and networked. Dicots have tap roots like the long thick central root seen on dandelions. In stems monocots have scattered vascular tissue and dicots have vascular tissue in an outer ring. Monocots have parallel veins in their leaves. Dicots have a network of veins in their leaves. Monocots usually have the flower parts in multiples of 3, while dicot petals are in multiples of 4 or 5.



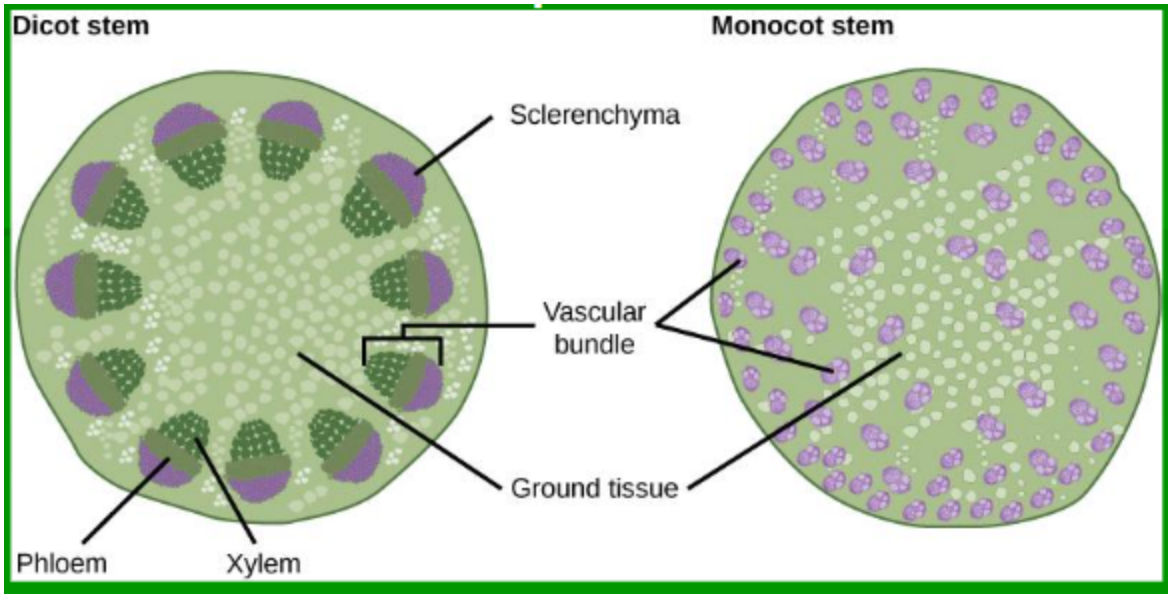
Read p 531-534 Do p 534 # 1 - 5

Monocots, Dicots and Vascular Bundles

All flowering plants are divided into two classes called _____ (monocots) and _____ (dicots). This is based on the number of _____ when the seed first _____. These are not true leaves but _____ that can use the starch stored in the seed while the plant grows large enough to have real photosynthetic leaves.

Orchids, grasses, wheat, and rice are _____ or _____ monocots. Bamboo, palms and sugar cane are _____ or tough stemmed monocots. Herbaceous dicots include potatoes, squash, salad greens and legumes. The woody dicots include common trees and shrubs like maples, oaks and roses.

Angiosperms all have the same plant parts but they are differently organized. The roots, stems and leaves are different because of the vascular bundle patterns are different.



Vascular Bundles

All ferns, gymnosperms and angiosperms have _____. There are two types of vessels in a vascular bundle, _____. Water and dissolved minerals are carried by xylem from the _____ to leaves and flowers. Phloem carries _____ between plant cells.

Xylem is formed from long _____ that are _____ cells. Water moves into xylem in the roots from the soil by _____. Water evaporates from the leaves by a

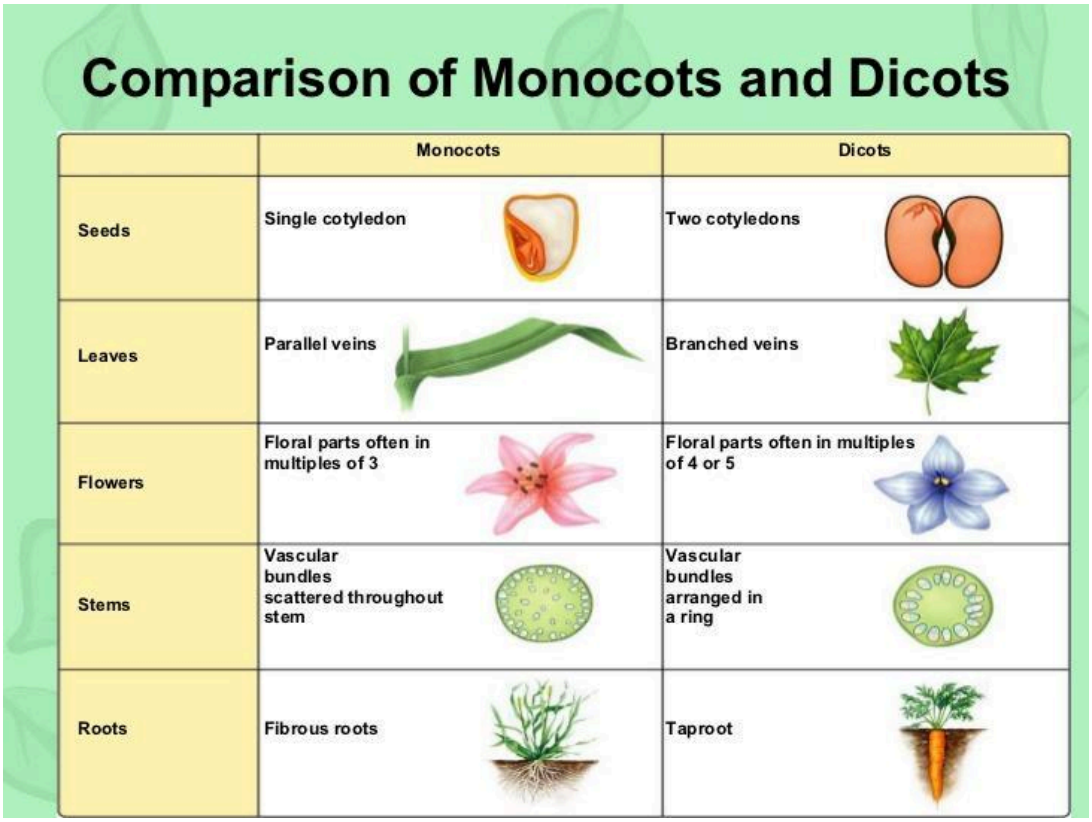
process called _____, and this _____.

Phloem is formed from _____ that are _____ cells.

Sugar dissolved in water is moved both _____the plant by a process called _____.

Comparing Monocots and Dicots

Monocot roots are _____ and _____. **Dicots** have_____ like the long thick central root seen on dandelions. In stems monocots have_____ and dicots have vascular tissue in an _____. Monocots have _____ in their leaves. Dicots have a _____ in their leaves. Monocots usually have the flower parts in multiples of _____, while dicot petals are in multiples of_____.



Homework

Do the seed activity Read p 531-534 Do p 534 # 1 - 5