

KEY FACTS

- Xylem: dead hollow cells, lignified walls → transports water and minerals UPWARD only
- Phloem: living cells with sieve plates → transports dissolved sugars (translocation) both ways
- Transpiration: water evaporates from leaves through stomata → pulls water up xylem
- Root hair cells: large SA → water by osmosis; minerals by active transport
- Guard cells: turgid = stomata open; flaccid = stomata close

KEY TERMS

Transpiration	Evaporation of water from leaves through stomata
Translocation	Transport of dissolved sugars in phloem from leaves to rest of plant
Xylem	Dead vessels — water and minerals upward — lignified walls
Phloem	Living cells — dissolved sugars — any direction

■ EXAM TIP: TRANSPIRATION (water, xylem, upward) ≠ TRANSLOCATION (sugars, phloem, any direction). Confusing these costs marks.