

Exercise walk-through

Xylem and phloem ■ 8.1

eXercise

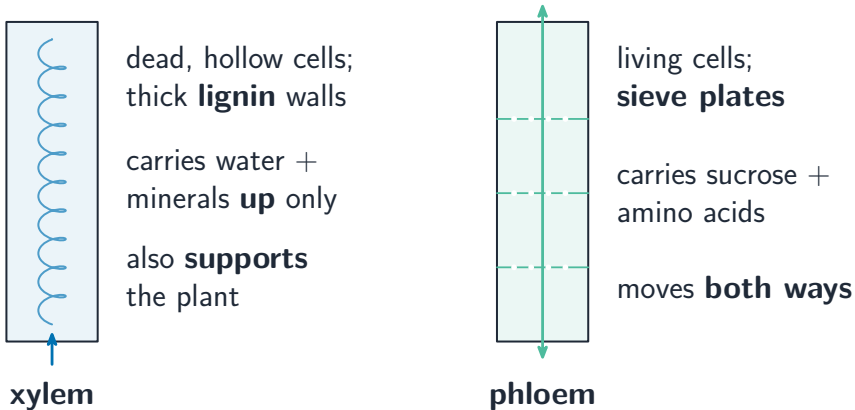
You must be able to

- state what xylem and phloem transport, and the direction
- describe the structure of xylem (dead, lignified tubes)
- locate xylem and phloem in a vascular bundle

Method — The two transport tissues

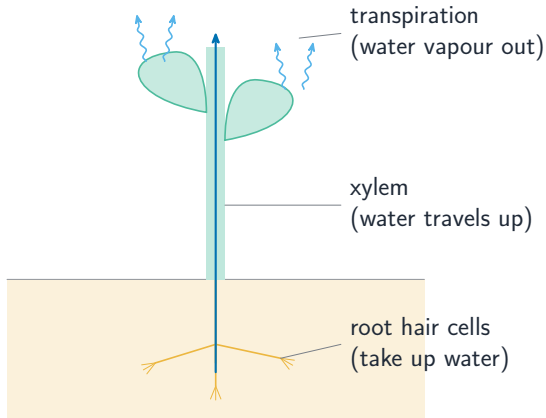
- **xylem cells:** dead and hollow, with thick **lignin** walls; joined end to end into one pipe.

Method — The two transport tissues



Xylem (dead, lignified tubes) beside phloem (living cells with sieve plates)

Method — The two transport tissues



Xylem and phloem run through the plant

Practice 2.1 ■ 1 mark

State what the xylem transports.

Solution 2.1

Worked steps

water and mineral ions (upward) **B1**.

Practice 2.2 ■ 1 mark

State what the phloem transports.

Solution 2.2

Worked steps

sucrose and amino acids **B1**.

Exam-style 3.1 ■ 1 mark

Xylem vessels are well adapted to carry water because they are:

- A** living cells full of cytoplasm
- B** dead, hollow tubes with lignin walls
- C** thin-walled and branched
- D** packed with chloroplasts

Solution 3.1

Method: The two transport tissues

- A living cells full of cytoplasm
- B dead, hollow tubes with lignin walls**
- C thin-walled and branched
- D packed with chloroplasts



Worked steps

B. Xylem cells are dead, hollow tubes with lignin walls.

Exam-style 3.2 ■ 1 mark

Xylem and phloem run through the plant.

- (a) State the additional role of xylem (besides transport).
- (b) Explain how the structure of xylem suits carrying water.

Solution 3.2

Method: The two transport tissues

Worked steps

- (a) it supports the plant **B1**.
- (b) the cells are dead and hollow, so water flows through freely **M1**; they are joined end to end into one continuous lignified pipe **A1**.