

7. Transport in plants

Starter Quiz · 课前小测

A-Level Biology

Name: _____ Score: _____

1. Which statement is correct?

- ☐ xylem carries water and minerals up; phloem carries dissolved sugars
- ☐ xylem carries sugars; phloem carries water up
- ☐ both carry only water
- ☐ both carry only sugars

2. Water enters a root hair cell by osmosis because the root hair has:

- ☐ a lower water potential than the surrounding soil water
- ☐ a higher water potential than the soil
- ☐ no cell membrane
- ☐ no cytoplasm

3. Transpiration is:

- ☐ the loss of water vapour from a plant
- ☐ the uptake of water at the roots
- ☐ the making of sugars in the leaf
- ☐ the transport of sucrose in phloem

4. Translocation in the phloem transports:

- ☐ sugars (mainly sucrose)
- ☐ only water
- ☐ oxygen
- ☐ minerals only

5. Xylem vessels are strengthened and waterproofed by _____ in their walls.

6. Water enters root hair cells from the soil by _____.

7. Water vapour leaves the leaf mainly by diffusing out through pores called _____.

8. In translocation, a "source" is:

☐ where the assimilate is made or released, such as a photosynthesising leaf

☐ where the assimilate is used or stored

☐ the xylem

☐ the root hair

9. A mature xylem vessel is a living cell, full of cytoplasm and a nucleus.

☐ True ☐ False

10. Sucrose is loaded into the sieve tube at the source by _____ transport (using proton pumps).

A-Level Biology**1. xylem carries water and minerals up; phloem carries dissolved sugars**

Xylem moves water and mineral ions upward; phloem moves dissolved assimilates (mainly sucrose).

2. a lower water potential than the surrounding soil water

Water moves down the water-potential gradient, into the root hair which has the lower water potential.

3. the loss of water vapour from a plant

Transpiration is water evaporating inside the leaf and the vapour diffusing out through the stomata.

4. sugars (mainly sucrose)

Phloem carries dissolved sugars (assimilates), unlike xylem which carries water and minerals.

5. lignin

Lignin makes a strong, waterproof, hollow pipe — and the cells die, leaving an open tube.

6. osmosis

Water moves down a water-potential gradient into the root hair.

7. stomata

After evaporating from leaf cell surfaces, the vapour diffuses out through the stomata.

8. where the assimilate is made or released, such as a photosynthesising leaf

A source makes/releases the assimilate (e.g. a leaf); a sink uses or stores it (e.g. a growing root).

9. False

Xylem vessels are dead and empty — that is what makes them a fast, open pipe for water.

10. active

Companion cells pump H^+ out, then cotransporters bring sucrose in with the ions — active transport.