Following Water Through Two Leaf Chambers

Base your answers on the information provided and your knowledge of chemistry. Use the 2025 Chemistry Reference Tables as needed.

A display compares two equal-area leaves in sealed chambers. They take up liquid water through a model stem and release water vapor to the chamber air. The difference gives the incoming water that the leaf does not return as vapor during the observation. No water condenses or leaves either chamber.

Chamber	Water taken up (g)	Water released as vapor (g)
P	5.0	4.0
Q	8.0	7.0

1 Which chamber shows more water movement from the leaf into the air?

(1) P only

(2) Q only

(3) Both show the same movement.

(4) The vapor record cannot compare them.

2 Calculate and compare how much of the incoming water is not returned as vapor by each leaf. [1]

Answer and work

3 A student says the greater liquid intake in Q establishes that Q made more sugar by photosynthesis. Evaluate the claim using the water records. [1]

Answer and work

A second display repeats both chambers and also measures the net change in carbon dioxide in the air at matched light and leaf area.

4 Describe how that measurement could provide evidence about carbon uptake that the water measurements do not provide. [1]

Answer and work