Finding What Limits a Model Algae Bed

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

A pond exhibit uses a simulated algae bed. Its output is the net volume of oxygen added to the water each minute. The simulation holds temperature, algae amount, and all other settings fixed while changing light and dissolved carbon dioxide.

Run	Light setting	Carbon dioxide setting	Net oxygen added (mL/min)
P	Low	Low	2
Q	High	Low	2
R	Low	High	3
S	High	High	8

1 Which pair isolates the effect of light when carbon dioxide is high?

(1) P and Q

(2) P and R

(3) Q and S

(4) R and S

2 Use both carbon dioxide settings to evaluate the claim that extra light always increases net oxygen output. [1]

Answer and work

3 Explain why the class tested a carbon dioxide setting when modeling oxygen output from photosynthesis. [1]

Answer and work

The class adds a medium carbon dioxide setting. It wants to know whether extra light helps at this setting.

4 Describe the two new trials the class should compare and the observation that would answer its question. [1]

Answer and work