Finding a Reading Time for a Salt Sensor

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

A class tests a model sensor that reports dissolved salt concentration. The reference concentrations are 2.0 g/L and 8.0 g/L. The sensor has to report both within 0.2 g/L of their references. The class can wait at most six minutes for a reading.

Time after placing probe (min)	**Reading for 2.0 g/L (g/L)**	**Reading for 8.0 g/L (g/L)**
2	1.9	6.5
4	2.0	7.6
6	2.0	8.0

1 What is the earliest listed time that meets the accuracy requirement for both references?

(1) Two minutes

(2) Four minutes

(3) Six minutes

(4) None of the listed times

2 Why does the low reference alone give too little evidence for a two-minute reading rule? [1]

Answer and work

A student sees an unknown sample reading rise between minutes two and six and says the liquid must have gained dissolved salt.

3 Use the high reference to give another explanation for the change in the unknown reading. [1]

Answer and work

4 Describe a check using a second method that measures concentration quickly and accurately. State which result would support a slow response from the original sensor. [1]

Answer and work