Distinguishing Molecule Turning From Ion Motion

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

A model display puts liquid particles between a positive plate and a negative plate. In one case the particles are neutral polar molecules with opposite partial charges at their ends. In the other case they are separate positive and negative ions. The display records whether particles turn or move through the liquid.

Sample	**Observation with plates charged**	**Charge carried between plates**
P	Opposite ends of molecules turn toward opposite plates	No
Q	Positive and negative ions move in opposite directions	Yes

1 Which observation distinguishes movement of separate charged particles from turning of neutral molecules?

(1) Q’s positive and negative ions move in opposite directions.

(2) P’s particles have two different ends.

(3) Both samples respond to the plates.

(4) Both plates are near the liquid.

2 A student says that any response to charged plates shows that a sample carries charge through the liquid. Evaluate the claim using P and Q. [1]

Answer and work

The class reverses which plate is positive and which is negative. It does not change the particles in either liquid.

3 Predict one change in the P record and one change in the Q record after reversal. [1]

Answer and work

4 Explain why reversing the plates does not change the net charge of any P molecule. [1]

Answer and work