Checking Pore Connections in Two Panels

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

A workshop removes an equal amount of soluble filler from two model panels. The spaces left by the filler become empty pores. Each panel has a total volume of 20 cm^3. A separate reading gives the remaining solid volume. Water can pass through the panel only if there is a connected path from one face to the other.

Panel	**Remaining solid volume (cm^3)**	**Water reaching the far face during the test (mL)**
P	14	0
Q	14	3

1 Which panel has evidence of a connected path through it?

(1) P only

(2) Q only

(3) Both panels

(4) Neither panel

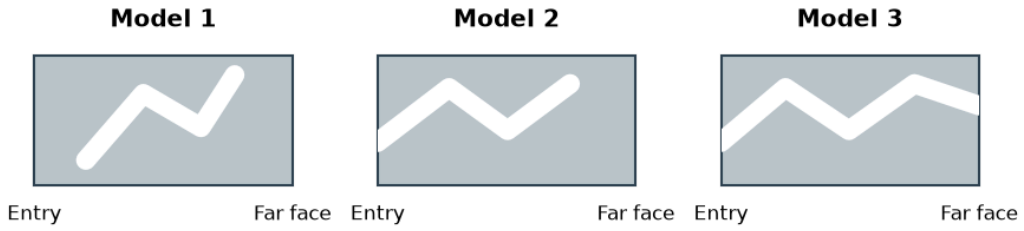
2 Calculate the empty pore volume and its fraction of the total for each panel. [1]

Answer and work

3 A student predicts the same water passage because the pore volumes are equal. Explain how the pore arrangement can account for the different readings. [1]

Answer and work

A follow-up shows that water enters part of P but still never reaches the far face during the test.



Three possible cross sections. White spaces inside the shaded panels represent pores.

4 Which pictured model fits the follow-up? Use both faces to explain your choice. [1]

Answer and work