Checking Gas Caught on a Solid Surface

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

A sealed display holds 30 gas particles in each trial. A solid insert can hold some particles at its surface by attraction. Particles at the surface are still inside the container. The model's pressure is proportional to the number of freely moving gas particles at the same volume and temperature.

Insert	Free gas particles after the test	Particles held on the surface
P	24	6
Q	18	12

1 Which insert leaves the lower gas pressure under the matched conditions?

(1) P only

(2) Q only

(3) Both give the same pressure.

(4) The free-gas counts do not give a comparison.

2 Find the fraction of the original gas held by each insert's surface. [1]

Answer and work

3 A student attributes the lower gas pressure with Q to particles escaping the container. Use both counts to evaluate the claim. [1]

Answer and work

The display changes Q's surface so it releases five of the held particles. The chamber temperature and volume are restored to their original values, and no particles are added or removed.

4 Predict the new free and held counts, and describe the pressure change relative to the previous Q reading. [1]

Answer and work