Checking Two Probe Tips in an Indent Test

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

A display compares two polymer panels by pressing a flat probe tip against each one. In this model, pressure at the tip is the force divided by its contact area. The same material may dent under a narrow tip and stay intact under a wider tip at the same force.

Panel	**Applied force (N)**	**Tip area (mm^2)**	**Permanent mark**
P	12	3	Yes
Q	12	6	No

1 Which panel experiences more pressure in the recorded test?

(1) P

(2) Q

(3) Both experience the same pressure.

(4) No pressure acts on Q.

2 A student concludes that P is less resistant to dents than Q because the applied forces match. Evaluate the comparison using the tips. [1]

Answer and work

The class repeats Q with the 6 mm^2 tip. It wants the pressure to match the original P test.

3 Calculate the force needed in the repeat test for Q. [1]

Answer and work

4 Describe a comparison of the two materials using the same force and contact area. State one other test condition to match and what to measure after unloading. [1]

Answer and work