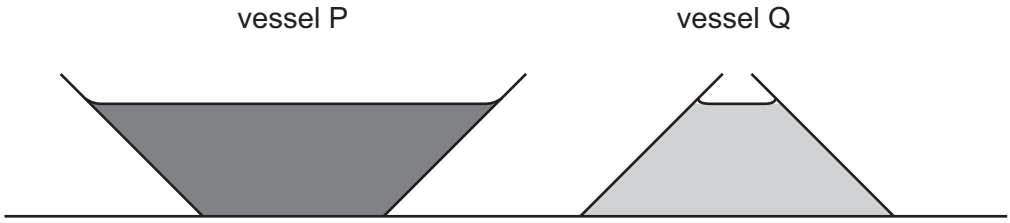
19 A hammer with 10 J of kinetic energy hits a nail and pushes it 5.0 mm into a plank.

Both the hammer and nail come to rest after the collision.

What is the average force that acts on the nail while it moves the 5.0 mm?

A 0.050 N **B** 2.0 N **C** 50 N **D** 2000 N

20 The diagram shows two vessels, P and Q, both with sides inclined at 45°.



Vessel P tapers outwards and vessel Q tapers inwards, as shown.

Both vessels contain a liquid. The depth of the liquid in the vessels is the same. The liquid in vessel P is twice as dense as the liquid in vessel Q.

What is the ratio $\frac{\text{pressure due to the liquid on the base of P}}{\text{pressure due to the liquid on the base of Q}}$?

A $\frac{2}{1}$ **B** $\frac{\sqrt{2}}{1}$ **C** $\frac{1}{\sqrt{2}}$ **D** $\frac{1}{2}$

Space for working