

**SKILL STATION ACADEMY**

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IITJEE-A1-25**PHYSICS-FLUIDS-WORKSHEET-01**

1. A force of 125 N is acting on a square area of side 50 cm^2 . Find the force acting per unit area in kPa .
2. A pressure of 100 kPa is acting on a rectangular area of dimensions $80\text{ cm} \times 40\text{ cm}$. Find the force being exerted on the surface.
3. Convert 10 m s^{-2} to cm s^{-2}
4. Convert 1 N to *dyne*
5. The density of oil is given as 0.85 gcm^{-3} . Convert this into kg m^{-3}
6. Find the pressure acting on a cross-sectional area of 0.001 cm^2 if a force of 40 N is acting
7. A cylindrical container with water whose density $\rho = 1000\text{ kg m}^{-3}$ is filled to a height of 1 m . The cross sectional area of the container is $\pi\text{ m}^2$. Find the pressure acting at the bottom of the container. (Take $g = 10\text{ ms}^{-2}$)
8. Find the pressure acting at the bottom of a mercury liquid column whose height is 76 cm . Given the density of mercury, $\rho = 13.6\text{ g cm}^{-3}$. Assume $g = 1000\text{ cm s}^{-2}$
9. A cylindrical container is filled with water to a height of 1 m . (i) Find the pressure exerted at the bottom of the container. Now oil with less density is fill on top of the water column for 1 m . The combined height of the fluid is 2m . (ii) Find the total pressure exerted by the two fluids at the bottom of the container. (iii) Also, find the pressure exerted by the oil at the separation layer between oil and water. Take the density of water to be 1000 kg m^{-3} and oil to be 750 kg m^{-3}