

4 Forces, density and pressure – Part 1

—Answers

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4.1 $\text{moment} = F \times d = 25 \times 0.20 = 5.0 \text{ N m}$.

4.2 clockwise = anticlockwise: $W \times 0.20 = 40 \times 0.30 = 12$, so $W = 12/0.20 = 60 \text{ N}$.

4.3 $\rho = m/V = 240/30 = 8.0 \text{ g cm}^{-3}$.

4.4 $p = F/A = 50/0.25 = 200 \text{ Pa}$.

4.5 $p = \rho gh = 1000 \times 9.8 \times 5.0 = 4.9 \times 10^4 \text{ Pa}$.

4.6 Pressure $p = \rho gh$ increases with depth h , so the water pushes hardest at the bottom of the dam. The dam is made thicker there to withstand the much greater pressure.