

# Exercise

## Fluid Mechanics

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*Fluid Mechanics*

*by Mazni bt. Mustafa*

<http://ocw.ump.edu.my/course/view.php?id=464>

# 5.1 Mass and Density

Calculate the volume of water that has the same mass of 100 cm<sup>3</sup> of lead? Determine the weight density of lead?



## 5.2 Pressure

A bungalow kitchen floor dimensions is 4.50 m length and 3.20 m wide and 2.40 m height. Given the air density in the kitchen is  $1.29 \text{ kg/m}^3$ . Calculate the weight of the air in kitchen? Calculate force exerted on the kitchen floor.



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Ans: 437 N,  $1.46 \times 10^6 \text{ N}$

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## 5.3 Buoyant Forces and Archimedes Principle

A tuna fish have a density slightly less than that of water. These tuna fish must exert a force (swim) to stay submerged in water. Determine the force must an 85.0 kg tuna fish exert to stay submerged in seawater if tuna fish density is  $1015 \text{ kg/m}^3$ ?



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8.21 N

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## 5.4 Pascal's Principle

A mechanics used a hydraulic press to lift a MyVi car for inspection. A force of 400 N is exerted to a 4 cm diameter of a small piston. Calculate the diameter of the large piston the mass of MyVi is 200 kg?



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Ans: 0.088 cm