



P11: Force and Pressure Knowledge Organiser (Physics)

Pressure	<ul style="list-style-type: none"> •The force acting per unit of area when the force is acting at right angles to the surface. •Measured in N/m^2 or Pascals (Pa) •1 Pa is equal to 1 N/m^2 •Pressure is calculated by dividing the force by the area it acts on ($P = F \div A$). 	Floating and Sinking	<ul style="list-style-type: none"> •When the weight of an object is equal to the upthrust, the object will float •When the weight of an object is more than the upthrust when fully immersed, it will sink.
Pressure in Liquids	<ul style="list-style-type: none"> • The pressure exerted by a liquid increases with depth. The deeper you go, the more pressure acts. •Liquids will flow until the pressure along the same horizontal level is constant. •More dense liquids exert more pressure (as there is more mass per unit of volume and therefore force). 		
Pressure in a Column of Liquid	<ul style="list-style-type: none"> •The pressure at the bottom of a column of liquid depends on the density of the liquid, the height of the column and the gravitational field strength •$p = h \times \rho \times g$ •ρ is rho, the symbol of density 		
Atmospheric Pressure	<ul style="list-style-type: none"> •The pressure caused by the weight of the atmosphere •Caused by air particles colliding with objects and exerting a tiny force on an area. •Lots of particles collide with objects on Earth per second so atmospheric pressure is large : 100kPa at sea level •There is less atmospheric pressure at higher altitudes than at lower ones as there is less air above that altitude. •The density of the atmosphere decreases with altitude. 		
Upthrust	<ul style="list-style-type: none"> •The upwards force exerted on an object by a fluid •Caused by the pressure in the fluid. •Objects placed in a fluid displace some of the fluid •As the object is lowered into the fluid, it displaces more of it. •If the object is fully immersed in a fluid, the volume of the fluid displaced is equal to the volume of the object. •Upthrust is the resultant of the upward force of the fluid at the bottom of the cylinder and the downward force of the fluid at the top. 		
Key Equations To Learn			
Pressure, P		Pressure = Force \div Area $P = F \div A$	