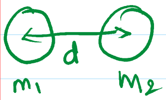
FORMULA sheeT

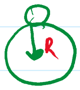
Saturday, November 25, 2023 10:47 AM

Formula sheet

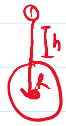
Gravitation



$F = \frac{G m_1 m_2}{d^2}$



$g = \frac{GM}{R^2}$



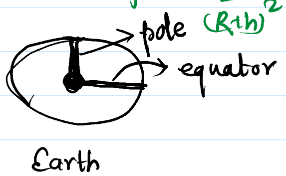
$g' = \frac{GM}{(R+h)^2}$

$g' = \frac{(R)^2}{(R+h)^2} \times g$

$W = mg$

g at pole: $9.83 m/s^2$

g at equator: $9.78 m/s^2$



Data sheet:

$g_{surface} : 9.8 m/s^2 \cong 10 m/s^2$

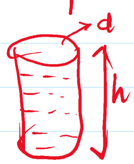
$g_{moon} = \frac{1}{2} g_{earth}$

Escape velocity = 11.2 km/hrs

Pressure:

$P = \frac{F}{A}$ unit of pressure is pascal.

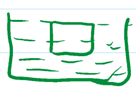
Liquid pressure = hdg



Pascal's law:

$F_1 A_1 = F_2 A_2$

Archemedies principal: $U = vdg$



Upthrust = weight of liquid displace.

weight of object in air - weight of object in water = weight of liquid displace.

$W_a - W_w = W_d$

- W_a = weight of object in Air
- W_w = " " " " water
- W_d = weight of liquid displace

$v_1 d_1 = v_2 d_2$

Data sheet:

Upthrust = Newton

density = kg/m^3

volume : m^3

(ρ_{water}) density of water = $1000 kg/m^3$, 1 g/cc.

Heat:

$Q = msdt$ $\{dt = T_2 - T_1\}$

dt change in tempreature

T_2 = final temp^r

T_1 = initial temp^r

s = specific heat capacity.

Specific heat capacity of water = 4200 J/kg°C

principle of calorimetery:

$Q_e = Q_1$

m sdt = ms dt

Wave:

$\frac{\sin i}{\sin r} = \mu$

$\mu = \frac{c}{v}$

$\lambda = \frac{v}{f}$

$\sin i_c = \frac{1}{\mu}$

principle of calorimetery:

$$Q_2 = Q_1$$

$$m_1 s_1 dt_1 = m_2 s_2 dt_2$$