

WEEK 3: FQ#1 MOTION

Period/Frequency $T = \frac{1}{f}$

Definition of Speed/Velocity $v = \frac{\Delta d}{\Delta t}$

Definition of Acceleration $a = \frac{\Delta v}{\Delta t}$

$d = vt$

$d = \frac{1}{2}at^2$

$v = at$

$a = \frac{v^2}{r}$

WEEK 4: FQ#2 ISAAC NEWTON

Newton's second Law $a = \frac{F}{m}$

Weight/Mass $W = mg$

Law of Universal Gravitation $F = \frac{Gm_1m_2}{d^2}$

$F = \frac{mv^2}{r}$

WEEK 7: FQ#3 ENERGY AND MATTER

Definition of Linear Momentum $= mv$

Newton's Second Law again $F = \frac{\Delta(mv)}{\Delta t}$

Definition of Work $= Fd$

Kinetic Energy $KE = \frac{1}{2}mv^2$

Gravitational Potential Energy $PE = mgd$

Definition of Power $\frac{Work}{\Delta t} \text{ or } \frac{E}{\Delta t}$

$v = \sqrt{2gd}$

$d = \frac{v^2}{2g}$

Definition of Pressure

$$p = \frac{F}{A}$$

$$p = D_w h = Dgh$$

Definition of Mass Density

$$D = \frac{m}{V}$$

Definition of Weight Density

$$D_w = \frac{W}{V}$$

Archimedes' Principle

$$F_b = W_{fluid\ displaced}$$

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WEEK 8: FQ#4 TEMPERATURE AND HEAT

Thermal Expansion

$$\Delta l = \alpha l \Delta t$$

Pressure, Volume, Temperature

$$pV = (constant)T$$

First Law of Thermodynamics

$$\Delta U = Work + Q$$

Heat needed to raise ΔT

$$Q = Cm\Delta T$$

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WEEK 10: FQ#5 WAVES AND ELECTRICITY

Speed, Frequency, Wavelength

$$v = f\lambda$$

Coulomb's Law

$$F = \frac{9 \times 10^9 q_1 q_2}{d^2}$$

Definition of Current

$$I = \frac{q}{t}$$

Definition of Voltage

$$V = \frac{E}{q} = \frac{Work}{q}$$

Ohm's Law

$$V = IR$$

Power Consumption

$$P = VI$$

Energy Use

$$E = Pt$$

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WEEK 12: FQ#6 E & M

Input and Output Voltages $\frac{V_o}{V_i} = \frac{N_o}{N_i}$

Speed, Wavelength, Frequency $c = f\lambda$

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WEEK 13: FQ#7 OPTICS

Lens Formula $p = \frac{sf}{s-f}$

Magnification of a lens system $M = \frac{\text{image height}}{\text{object height}}$

Magnification using p and s $M = \frac{-p}{s}$

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WEEK 14: FQ#8 ATOMS AND NUCLEI

Energy of a Photon $E = hf$

Energy of Emitted/Absorbed Photon $\Delta E = hf$

De Broglie Wavelength $\lambda = \frac{h}{mv}$

Definition of Mass Number $A = Z + N$

Alpha Particle $\alpha = {}^4_2\text{He}$

Beta Particle $\beta = {}^0_{-1}e$

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WEEK 15: FQ#9 SUPERQUIZ – KNOW ALL FORMULAS