

These 3 pages include all of the equations that will be provided on the final exam

Constants, Units and Vectors - What is the symbol? What are the Units? When did we use it?

$$g = 9.8 \text{ m/s}^2 \quad R = \sqrt{R_x^2 + R_y^2}, \text{ at } \tan^{-1} \left(\frac{y}{x} \right) \quad G = 6.67 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$$

Kinematics and Projectiles - What is the symbol? What are the Units? When did we use it?

$$x_f = x_i + v_i t + \frac{1}{2} a t^2 \quad v_f^2 = v_i^2 + 2 a d \quad v_f = v_i + a t$$

Forces and Circular Motion - What is the symbol? What are the Units? When did we use it?

$$F = m a$$

$$T = F d \sin \theta$$

$$w = m g$$

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

$$F_f = \mu N$$

$$F_c = \frac{m v^2}{r}$$

$$F_s = (-) k x$$

Energy and Momentum - What is the symbol? What are the Units? When did we use it?

$$W = F \cdot d \cos\theta$$

$$p = m v$$

$$J = F t = \Delta p$$

$$P = \frac{W}{t}$$

$$PE = mgh$$

$$PE_s = \frac{1}{2} k x^2$$

$$KE = \frac{1}{2} m v^2$$

$$Eff = \frac{Work_o}{Work_i}$$

Harmonics - What is the symbol? What are the Units? When did we use it?

$$T = 2\pi\sqrt{\left(\frac{l}{g}\right)}$$

$$T = 2\pi\sqrt{\left(\frac{m}{k}\right)}$$

$$T = \frac{1}{f}$$

$$V = f \lambda$$

$$V = \sqrt{\frac{T}{\frac{m}{l}}}$$

Sound and Light - What is the symbol? What are the Units? When did we use it?

$$f_o = f_s \left(\frac{v \pm v_o}{v \mp v_s} \right)$$

$$\frac{1}{f} = \frac{1}{d_i} + \frac{1}{d_o}$$

$$\theta_i = \theta_r$$

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

$$f = \frac{r}{2}$$

$$M = -\frac{d_i}{d_o}$$

$$n_i \sin \theta_i = n_r \sin \theta_r$$

$$c = 3 \times 10^8 \text{ m/s}$$

$$M = \frac{h_i}{h_o}$$

Electricity and Magnetism - What is the symbol? What are the Units? When did we use it?

$$V = I R$$

$$P = I V$$

The following topics could be included on the final. What do you remember about:

Numbers, Units, and Vectors

What is a vector quantity?

How do you find the x or y component of a vector

What are two ways to add two vectors

Kinematics

Can you solve equations for quantities of motion including position, distance, or displacement

speed or velocity

acceleration

How do you interpret a graph for quantities of motion

Projectiles

What is different about solving for motion in 2 dimensions?

When do you use gravitational acceleration for the vertical component of motion

Do you understand that the horizontal speed of a projectile is constant

How do you solve for time of flight

What are the steps for solving for the range of a projectile

Forces

State each of Newton's Laws

How do you know if an object is in equilibrium

What is a Normal force?

What influences Friction

What are three things you know about Centripetal forces?

Where did we use Tension in motion problems?

what three things are multiplied together to calculate Torque

Momentum and Energy

Momentum is the product of _____ and _____

Impulse has two equations. They are:

Collisions

Elastic or Perfectly Inelastic

Gravitational Potential Energy

Kinetic Energy

Elastic Potential Energy

Hooke's Law

Spring Constant

Work

Power

Machines

Efficiency

Harmonics

What is the Period of motion, and what units would you use?

Frequency

Wavelength

Wave speed

Superposition

Pendulum motion

Spring Oscillations

Sound and Light

Harmonics

How do two Decibel Levels compare?

What changes according to the Doppler Effect

Reflection

Refraction

Snell's Law

Plane Mirrors

Spherical Mirrors

Thin Lenses: What is the difference between..

Real or Virtual images

Inverted or Upright images

Converging or Diverging

Electricity

Resistance

Ohm

Potential

Volt

Current

Ampere

Charge

Coulomb

Series

Parallel