

Name: _____

Period _____

Physics 40

Mid-Year Exam Topics

Conversions Metric prefixes

Waves

Wave behaviors (reflection, refraction, interference, dispersion, diffraction)

Types of Waves Longitudinal, Transverse, Standing , be able to label parts

Calculate $T_1 = 1/f$ $v = \lambda f$

Sound – properties, wave behavior, needs medium, longitudinal wave, nonpolarizable, reflection, Doppler Effect, Sonic Boom, Beats, Speed of sound calculations and effect of a temperature change on velocity.
Compare the velocity of sound in a gas, liquid and solid, resonance.

Light - properties, no medium needed, 3.0×10^8 m/s, wave behavior, polarizable, transverse wave, Electromagnetic radiation

Be able to compare and contrast sound waves with light waves.

Know variation of λ , f , relative energy

Calculate $c = \lambda f$

Mirror reflects, lens refracts light.

For both mirrors and lenses, know how the image forms, be able to use ray diagrams and know when real and virtual images form.

Be familiar with the six cases for lenses and mirrors and how to apply them.

Lenses - convex and concave

Mirrors – plane, convex, concave

Calculate f , d_o , d_i , m , h_o , h_i for mirrors and lenses.

Law of Reflection

Be able to use Law of Reflection and Snell's Law, n , θ , critical angle and the velocity of light in a given medium. Understand index of refraction $n = c/v$.

Be able to draw angles of incidence and refraction and measure them using a protractor.

Refraction phenomena – sunsets, rainbows, prisms, mirages, total internal reflection, critical angle, lenses.

Kinematics – a , v , d – vector and scalar quantities. Be able to define displacement, velocity, and acceleration.

Kinematic equations – be able to apply from rest or in motion, free fall – make graphs and interpret