Review of units in physics

Recall from Phys 4A:

Newton's Second law (for constant mass m) is: Force = (mass) (acceleration).

$$F = m\,a$$

Units: 1 Newton = 1 N ≡ 1 kg m/s^2

Remember: Weight (W) is a force, with W = m g (Units: N = kg m/s^2)
and g = the acceleration of gravity = 9.80665 m/s^2 at sea level.
Weight is in Newtons (since it's a force), but mass is in kilograms (kg).

Energy is measured in Joules (J). Work is a form of energy, so:

Work = (Force) (distance moved)

Units: 1 Joule = 1 J = (Newtons) (m) = 1 kg m^2/s^2 .

Power = Energy/time = J/s ≡ 1 W = 1 Watt .

Recall from Phys 4B:

For electric field: 1 Volt/m = 1 V/m = 1 N/Coulomb = 1 T m/s .

For magnetic field, since E/B = c,

$$\frac{\mathrm{V/m}}{\mathrm{T}} = \frac{\mathrm{m}}{\mathrm{s}}$$

so 1 V/m = 1 T m/s.

Wavelength $\lambda \equiv v/f$

$\lambda f = v$ where v = wave speed,
and f = frequency (how many waves go by, per second)

Units: (m)(s^{-1}) = m/s

The unit for frequency is: 1 Hertz = 1 Hz = 1 cycle/s = 1 s^{-1} .

Intensity I = Power/Area = W/m^2 .