

# Wave Problem Review

Name:

Remember:  $E = (h)(f)$  and  $v = (\lambda)(f)$

$E$  = energy (J)

$v$  = speed of light ( $3.0 \times 10^8$  m/s)

$f$  = frequency (Hz)

$h$  = Planck's constant ( $6.6 \times 10^{-34}$  J/Hz)

$\lambda$  = wavelength (m)

$1 \times 10^9$  nm = 1 m

1. If the frequency of light is  $5.8 \times 10^{15}$  Hz, then what is the wavelength?

a. What is the energy of the light?

b. What type of radiation is this?

2. If  $\lambda = 540$  nm, then what is the wavelength in meters?

a. What is the frequency of the light?

b. What is the energy of the light?

c. What is the color of the light?

3. If the energy of light is  $3.6 \times 10^{-18} \text{J}$ , what is the frequency of the light?

a. What is the  $\lambda$ ?

b. What type of radiation is this?

4. If the frequency of light is  $4 \times 10^{13} \text{ Hz}$ , what is its energy?

a. What is the wavelength?

b. What type of radiation is this?

5. If the wavelength is  $3 \times 10^{-11} \text{ m}$ , what is the frequency of the radiation?

a. What is the energy?

b. What type of radiation is this?