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AST 9: Homework 4

1] Is light a wave or a particle?

2] What is a photon?

3] The frequency of a light wave can be measured as the number of waves that go past in a time unit. The speed of light is approximately 300 million meters/sec and the wavelength of orange light is roughly 6×10^{-7} meters. How many waves of orange light will go past you in one second? (Use the relationship between speed of a wave, wavelength and frequency.)

4] If two waves (Wave A and Wave B) have the same speed, but Wave A has three times the wavelength of Wave B, how are their frequencies related?

5] What is the Doppler effect?

6] Is it possible to identify an element by the radiation it emits?

7] If the frequency of an electromagnetic wave doubles, how does its energy change?