

Answer on Question #41996 – Physics – Other

Question.

What happens to the wavelength if the frequency is tripled and the speed is increased by a factor of six?

$$\frac{\nu}{\nu_0} = 3$$

$$\frac{c}{c_0} = 6$$

$$\frac{\lambda}{\lambda_0} = ?$$

Solution.

$$\lambda = c \cdot T = \frac{c}{\nu}$$

λ is a wavelength;

c is a speed of wave;

T is a period of wave;

ν is a frequency of wave.

So, if

$$\lambda_0 = \frac{c_0}{\nu_0}$$

and

$$\lambda = \frac{c}{\nu} = \frac{6 \cdot c_0}{3 \cdot \nu_0} = 2 \cdot \frac{c_0}{\nu_0} = 2 \cdot \lambda_0$$

Therefore,

$$\frac{\lambda}{\lambda_0} = 2$$

Answer.

$$\frac{\lambda}{\lambda_0} = 2$$