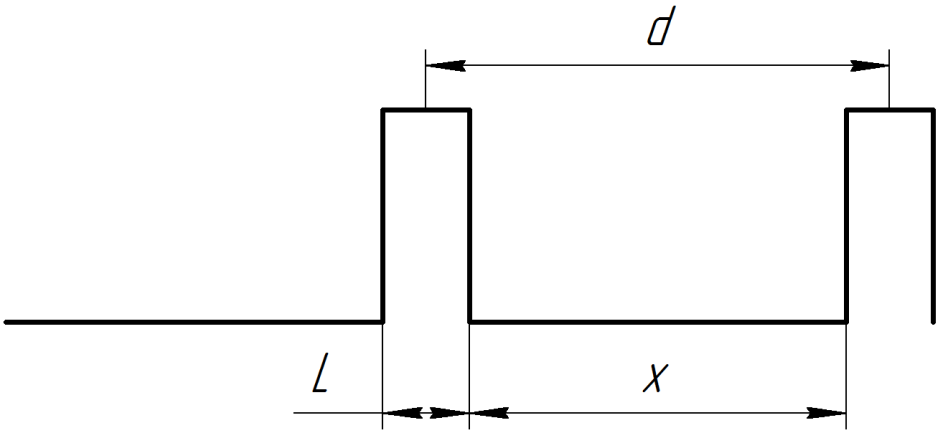
A laser fires at frequency of 40 hertz. Using c=3x10 to the 8 meters per second,how far apart is each pules?



Distance between two adjacent pulses (look at figure):

$$d = x + \frac{l}{2} + \frac{l}{2} = x + l$$

Total length of the N pulses:

$$S = Nd = ct$$

where N number of pulses, c – speed of light, t – time.

$$d = \frac{ct}{N} = \frac{c}{\frac{N}{t}} = \frac{c}{f}$$

$$d = \frac{3 * 10^8 m/s}{40 Hz} = 7.5 * 10^6 m$$

Answer: $d = 7.5 * 10^6 m$