Answer on Question 48871, Physics, Other

Question:

Use the fact that the speed of light in a vacuum is about 3.00 x 10^8 m/s to determine how many kilometers a pulse from a laser beam travels in exactly three hours.

Solution:

We can determine the distance D, which a pulse from a laser beam travels from the formula:

$$D = ct,$$

where, c is the speed of light in a vacuum, t is time.

So, let's convert the speed of light in meters per second to kilometers per hour in order to obtain correct answer and then substitute it in our formula:

$$D = 3.00 \cdot 10^8 \cdot 3.6 \frac{km}{h} \cdot 3h = 3240000000 \, km.$$

Answer:

$3.24 \cdot 10^9 \, km$ in three hours.