Answer on Question 55861, Physics, Other

Question:

A microbiologist measures the speed of a swimming bacterium. The bacterium covers a distance of 2.16 microns in 5.0 seconds. The biologist wished to compare the speed of the bacteria with other animals, but the speeds of other animals are listed in kilometers per hour. What is the speed of the bacterium in kilometers per hour? ($1\ micron = 1 \cdot 10^{-6} m$)

Use the scientific notation and expess your answer to the correct number of signifiant figures. Show work.

Solution:

By the definition of speed we have:

$$v = \frac{s}{t}.$$

So, we can find the speed of the bacterium from this equation (we also must convert microns to kilometers and seconds to hours):

$$v = \left(\frac{2.16 micron}{5.0 s}\right) \cdot \left(\frac{1 \cdot 10^{-6} m}{1 micron}\right) \cdot \left(\frac{1 km}{1000 m}\right) \cdot \left(\frac{3600 s}{1 h}\right) = 1.56 \cdot 10^{-6} \frac{km}{h}.$$

Answer:

$$v = 1.56 \cdot 10^{-6} \frac{km}{h}.$$