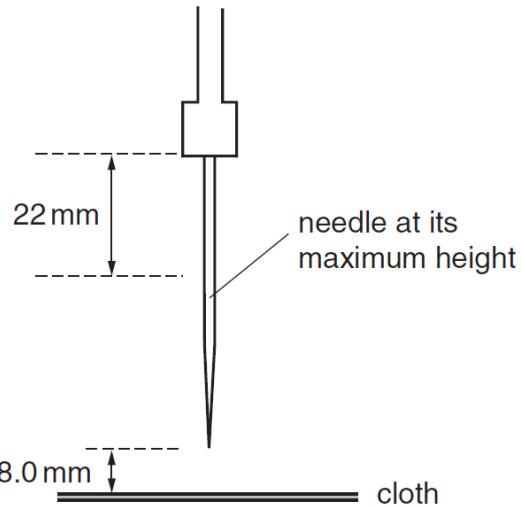


- 9 The needle of a sewing machine is made to oscillate vertically through a total distance of 22 mm, as shown below.



The oscillation is simple harmonic with a frequency of 4.5 Hz. The cloth that is being sewn is positioned 8.0 mm below the point of the needle when the needle is at its maximum height.

What is the speed of the needle as its tip touches the cloth?

- A 0.00317 m s^{-1} B 0.0848 m s^{-1} C 0.226 m s^{-1} D 0.299 m s^{-1}