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2014 7 A particle is moving in simple harmonic motion with period 6 and amplitude 5. **1**

Which is a possible expression for the velocity, v , of the particle?

(A) $v = \frac{5\pi}{3} \cos\left(\frac{\pi}{3}t\right)$ (B) $v = 5 \cos\left(\frac{\pi}{3}t\right)$ (C) $v = \frac{5\pi}{6} \cos\left(\frac{\pi}{6}t\right)$ (D) $v = 5 \cos\left(\frac{\pi}{6}t\right)$

A

As period = $\frac{2\pi}{n} = 6$, then $n = \frac{\pi}{3}$.

If SHM, then displacement in the form $x = a \sin(nt + \alpha)$.

i.e. $x = 5 \sin\left(\frac{\pi}{3}t + \alpha\right)$.

$\therefore v = \frac{5\pi}{3} \cos\left(\frac{\pi}{3}t\right)$

State Mean:
0.43

* These solutions have been provided by [projectmaths](#) and are not supplied or endorsed by BOSTES.