

**2015 9** Two particles oscillate horizontally. The displacement of the first is given by **1**

$x = 3 \sin 4t$  and the displacement of the second is given by  $x = a \sin nt$ . In one oscillation, the second particle covers twice the distance of the first particle, but in half the time. What are the values of  $a$  and  $n$ ?

(A)  $a = 1.5, n = 2$

(B)  $a = 1.5, n = 8$

(C)  $a = 6, n = 2$

(D)  $a = 6, n = 8$

**D**

Amplitude of first particle:  $a = 3$

$\therefore$  amplitude of second particle:  $a = 6$

Period of first particle:  $\frac{2\pi}{4}$

$\therefore$  period of second particle:  $\frac{1}{2} \times \frac{2\pi}{4} = \frac{2\pi}{8} \therefore n = 8$

$\therefore a = 6, n = 8$

State Mean:  
**0.62**

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