

Mathematics Questions by Topic

Motion and Force

Answer 2

Source: K22SM2Q17

Question 2

A particle of mass m kg slides from rest down a smooth inclined plane, and travels a distance of S metres down the plane in a time of T_1 seconds. Another particle of mass $2m$ kg is placed on the same plane and travels a distance of $2S$ metres down the plane in a time of T_2 , seconds, then

- A. $T_2 = 4T_1$
- B. $T_2 = 2T_1$
- C. $T_2 = T_1$
- D. $T_2 = \frac{T_1}{2}$
- E. $T_2 = \sqrt{2} T_1$

ANSWER E

$$ma = -mg \sin(\theta)$$

$$a = -g \sin(\theta), \quad u = 0$$

Note that when the mass is $2m$ the acceleration down the plane is the same, using

$$s = ut + \frac{1}{2}at^2$$