

2. A small stone is projected vertically upwards with speed 39.2 m s^{-1} from a point O .

The stone is modelled as a particle moving freely under gravity from when it is projected until it hits the ground 10 s later.

Using the model, find

- (a) the height of O above the ground, (3)
- (b) the total length of time for which the speed of the stone is less than or equal to 24.5 m s^{-1} (3)
- (c) State one refinement that could be made to the model that would make your answer to part (a) more accurate. (1)