



**E.g. 4** A hammer of mass 0.8 kg is moving at 12 m/s when it strikes a nail and is brought to rest. Calculate the change in momentum of the hammer.

**Working:** Change in momentum =  $0.8 \times 12 = 9.6$  Ns

**E.g. 5** In what time will a force of 12 N reduce the speed of a particle of mass 1.5 kg from 36 m/s to 12 m/s?

Video: [Impulse](#)

[Impulse EQ](#)

[Solutions to Starter and E.g.s](#)

### Exercise

p52 3A Qu 1-14

### Summary

Momentum = mass  $\times$  velocity i.e. Momentum =  $mv$

The units of momentum are Ns and direction is important.

Impulse of a **constant** force = force  $\times$  time = change in momentum =  $mv - mu$

Increase in speed:  $Ft = mv - mu$

Decrease in speed:  $Ft = mu - mv$