

PQ 8b Q

# Q1

A tennis racquet applied a force of 110 N for a period of 0.30 s to a ball initially at rest. Calculate the applied impulse.

## Q2

Calculate the size of the force needed to apply an impulse of 720 N s over a period of 0.060 s.

# Q3

Calculate the time during which a force of  $1.6 \times 10^2$  N must act to supply an impulse of  $8.0 \times 10^{-1}$  N s.

# Q4

Calculate the change in momentum one could expect from a force of  $1.4 \times 10^6$  N acting for a period of  $5.0 \times 10^{-3}$  s.

## Q5

A ball of mass 0.40 kg was acted on by an impulse of 4.8 N s.

Calculate the change of velocity that occurred.

# Q6

A car of mass 840 kg travelling at  $15.0 \text{ m s}^{-1}$  accelerated to  $25.0 \text{ m s}^{-1}$ . Calculate the impulse that was applied to cause this change of speed.

# Q7

A ball of mass  $0.600 \text{ kg}$  struck a net at  $12.0 \text{ m s}^{-1}$  and rebounded at  $10.0 \text{ m s}^{-1}$  a quarter of a second later. Calculate the average force exerted by the ball on the net.

# Q8

Calculate the time a force of 2.7 N must act to bring an object of mass 3.4 kg to rest from a velocity of 3.0 m s<sup>-1</sup>.

# Q9

A force of 8.6 N acted for 2.5 s on an object of mass 1.8 kg initially moving at 50.0 m s<sup>-1</sup>. Calculate the object's new speed.

# Q10

A tennis ball of mass 50 g served at  $35 \text{ m s}^{-1}$  was returned at the same speed. If the ball was in contact with the receiver's racquet during the return of service for one fiftieth of a second, calculate the force that was exerted on the ball.