

- 7 A goods train passes through a station at a steady speed of 10 m s^{-1} at time $t = 0$. An express train is at rest at the station. The express train leaves the station with a uniform acceleration of 0.5 m s^{-2} just as the goods train goes past. Both trains move in the same direction on straight, parallel tracks.

At which time t does the express train overtake the goods train?

- A** 6 s **B** 10 s **C** 20 s **D** 40 s

- 8 A constant resultant force F acts on an object of mass m for time t .

What is the change in momentum of the object?

- A** $\frac{F}{t}$ **B** $\frac{Ft}{m}$ **C** Ft **D** $\frac{F}{mt}$

- 9 The acceleration of free fall on the surface of planet P is one-tenth of that on the surface of planet Q.

On the surface of P, an object has a mass of 1.0 kg and a weight of 1.0 N.

What are the mass and the weight of the same object on the surface of planet Q?

	mass on Q/kg	weight on Q/N
A	1.0	0.1
B	1.0	10
C	10	10
D	10	100

- 10 A parachutist falls from rest from a balloon. The variation with time of the vertical velocity of the parachutist is shown.

In which region is the force due to air resistance much greater than the weight of the parachutist?

