9 In order that a train can stop safely, it will always pass a signal showing a yellow light before it reaches a signal showing a red light. Drivers apply the brake at the yellow light and this results in a uniform deceleration to stop exactly at the red light.

The distance between the red and yellow lights is x.

What must be the minimum distance between the lights if the train speed is increased by 20 %, without changing the deceleration of the trains?

A 1.20 x **B** 1.25 x **C** 1.44 x **D** 1.56 x

10 The gravitational field strength on the surface of planet P is one tenth of that on the surface of planet Q.

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

What are the mass and weight of the same body 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

11 A body, initially at rest, explodes into two masses M_1 and M_2 that move apart with speeds v_1 and v_2 respectively.

What is the ratio $\dfrac{v_1}{v_2}$?

A $\dfrac{M_1}{M_2}$ **B** $\dfrac{M_2}{M_1}$ **C** $\sqrt{\dfrac{M_1}{M_2}}$ **D** $\sqrt{\dfrac{M_2}{M_1}}$

Space for working