6 The time taken for an object to fall from rest through a certain distance on Mars is T_M. The time taken for the same object to fall from rest through the same distance on Earth is T_E. The acceleration of free fall on Mars is $3.71\,m\,s^{-2}$.

Assume that air resistance is negligible on both Earth and Mars.

What is the ratio $\frac{T_M}{T_E}$?

A 0.378 **B** 0.615 **C** 1.63 **D** 2.64

7 Which statement about mass is correct?

A Mass has a magnitude and a direction.

B Mass resists changes in motion.

C The greater the mass of an object, the greater its acceleration when falling in a vacuum.

D The mass of an object depends on its location.

8 A snooker ball has a mass of 200 g. It hits the cushion of a snooker table and rebounds along its original path.

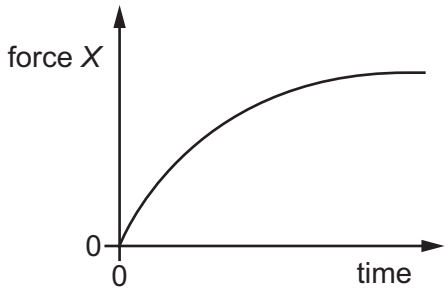
The ball arrives at the cushion with a speed of $14.0\,m\,s^{-1}$ and then leaves it with a speed of $7.0\,m\,s^{-1}$. The ball and the cushion are in contact for a time of 0.60 s.

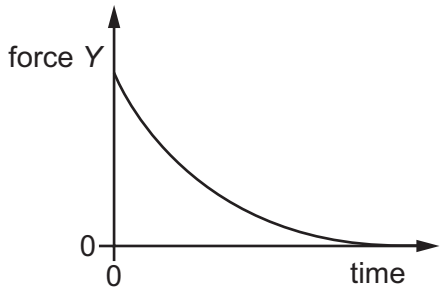
What is the average force exerted on the ball by the cushion?

A 1.4 N **B** 2.3 N **C** 4.2 N **D** 7.0 N

9 A ball falls from rest through air and eventually reaches a constant velocity.

For this fall, forces *X* and *Y* vary with time as shown.





What could be forces *X* and *Y*?

	force *X*	force *Y*
A	air resistance	resultant force
B	air resistance	weight
C	upthrust	resultant force
D	upthrust	weight