14 Which quantities are conserved in an inelastic collision?

	kinetic energy	total energy	linear momentum
A	conserved	not conserved	conserved
B	conserved	not conserved	not conserved
C	not conserved	conserved	conserved
D	not conserved	conserved	not conserved

15 A cyclist is travelling at a constant speed up a hill. The frictional force resisting the cyclist's motion is 8.0 N.

The cyclist uses 450 J of energy to travel a distance of 20 m.

What is the increase in the gravitational potential energy of the cyclist?

A 160 J **B** 290 J **C** 440 J **D** 610 J

16 A stone of mass m falls from rest at the top of a cliff of height h into the sea below. Just before hitting the sea the stone has speed v.

What is the average force of air resistance acting on the stone during its fall?

A mg **B** $\frac{m(v^2 - 2gh)}{h}$ **C** $m\left(g - \frac{v^2}{2h}\right)$ **D** $m\left(gh - \frac{v^2}{2}\right)$

17 A railway engine accelerates a train of total mass 1200 tonnes (1 tonne = 1000 kg) from rest to a speed of 75 m s^{-1}.

How much useful work must be done on the train to reach this speed?

A 3.4×10^6 J **B** 6.8×10^6 J **C** 3.4×10^9 J **D** 6.8×10^9 J