

Kinetic Energy Problems

Potentially useful equations:

$$E_K = \frac{mv^2}{2}$$

$$W = \Delta E$$

**** show all work.**

1. What is the kinetic energy of a 6 kg curling stone travelling at
a) 3 m/s b) 67 m/s
2. What is the mass of an object that is travelling at 15 m/s that has a kinetic energy of 524 J?
3. A 37.0 g arrow is shot from a crossbow at 225 km/h. What is the arrow's kinetic energy?
4. A 2000 kg truck is travelling at 50 km/h. What is the kinetic energy of the truck?
5. A flea has a mass of 0.002 kg. How fast would it have to fly in order to have the same kinetic energy as the truck in question 4? Convert your answer to km/h and comment on the result.
6. A 62 kg person is riding an 8 kg bike. How fast are they travelling if the kinetic energy is 12000 J? Convert to km/h.
7. How much work is done by the engine of a 1500 kg car to accelerate it from 4 m/s to 18 m/s?
8. A 66 kg person is running with a speed of 2.5 m/s. The person does 750 J of work during acceleration. What is their final speed?
9. An object has a kinetic energy of 2010 J. How much kinetic energy does it have if it maintains the same speed but the mass is doubled?
10. An object has a kinetic energy of 500 J. How much kinetic energy does it have when the speed is doubled?