## Work, Energy \& Power - Assessment

Name: $\qquad$ Date: $\qquad$

1. A 65 kg skateboarder accelerates from $12 \mathrm{~m} / \mathrm{s}$ to $18 \mathrm{~m} / \mathrm{s}$. Calculate the amount of work done on the skateboarder.
2. A 1200 kg car has a force acting on it resulting in an acceleration. The car's final speed was found to be $32 \mathrm{~m} / \mathrm{s}$ after $2,000,000 \mathrm{~J}$ of work was done on it. Calculate the initial speed of the car.
3. A cat is lifted from a position of 0.23 m above the ground to a new height of 3.40 m . It took 210 J of work to do the lifting. Calculate the mass of the cat.
4. The height between floors in a building is approximately 3 metres. A 85 kg firefighter carries himself from the ground floor to the $5^{\text {th }}$ floor. Calculate the work done by the firefighter. The firefighter now walks to the $1^{\text {st }}$ basement level (one floor below the ground floor). Calculate the work done by the firefighter in this case.
5. An object undergoes a series of accelerations caused by an external force. 4000J of work is done on the object. Then an opposing force of 150 N acts over a distance of 25 m . Then another 2000 J of work is done on the object. The final speed was found to be $23 \mathrm{~m} / \mathrm{s}$, which was double the initial speed. Calculate the mass of the object.
6. A 5000 kg meteor flies into the Earth's atmosphere at $4589 \mathrm{~m} / \mathrm{s}$ and is at an altitude of 50 km above the surface of the Earth. Assuming no air resistance, calculate the speed at impact. [Note the gravitational energy at 50 km is added to the kinetic energy at that altitude and then all of that energy is converted into kinetic energy.
