## Work, Energy & Power – Assessment

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. A 65 kg skateboarder accelerates from 12 m/s to 18 m/s. Calculate the amount of work done on the skateboarder.

2. A 1200kg car has a force acting on it resulting in an acceleration. The car's final speed was found to be 32m/s after 2,000,000J of work was done on it. Calculate the initial speed of the car.

3. A cat is lifted from a position of 0.23m above the ground to a new height of 3.40m. It took 210J 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 85kg firefighter carries himself from the ground floor to the 5<sup>th</sup> floor. Calculate the work done by the firefighter. The firefighter now walks to the 1<sup>st</sup> 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 150N 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 23m/s, which was double the initial speed. Calculate the mass of the object.

6. A 5000kg meteor flies into the Earth's atmosphere at 4589 m/s and is at an altitude of 50km above the surface of the Earth. Assuming no air resistance, calculate the speed at impact. [Note the gravitational energy at 50km is added to the kinetic energy at that altitude and then all of that energy is converted into kinetic energy.