**322**

**Work, Power and Energy**

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**Acknowledgement**

Mr John Gibson is a highly regarded educator and engineer. John taught Industrial Arts at a number of high schools before taking a position at Sydney Teachers’ College, then University of Sydney. He had an engineering education consultancy and has extensive experiencing working with NESA on Engineering Studies syllabus development and the HSC examination committee. The STEM Industry School Partnerships (SISP) Program asked John for his responses to the iTeachSTEM topic discussion questions. SISP is grateful to John for submitting these example discussion responses.

Work

1. **Define work.**

In the fiend of engineering, work occurs when a force causes a body to move. It is a vector quantity and its units are Joules.

1. **What is the unit for work?**

The unit for work or Joules (N m).

1. **Explain the concept that without movement, no work is done.**

In the definition of work it is clear that if there is no force and no movement (even miniscule movement), there can be no work done.

Power

1. **Define power in relation to work.**

Power is the rate of doing work and is equal to work divided by time. The relationships include:

P = W/t W = F \* s and, P = F v

1. **What is the unit for power?**

The unit for power is the Watt.

1. **What is the relationship between power and energy?**

Energy

1. **Define energy.**

Energy is the capacity to do work.

1. **What is the unit for energy?**

The unit for energy is the Joule (N m).

1. **What is KE?**

Kinetic Energy is the amount of energy a body possesses due to its motion.

1. **What is PE?**

Potential Energy is that energy that a body possessed due to its position relative to a reference height.

1. **Explain the concept of ‘conversation of energy’.**

Energy can neither be created nor destroyed. It can however be changed from one form to another. Batteries driving an electric motor connected to a mowing device conserves energy by changing the electrical energy of the battery to the mechanical energy of the motor, to heat energy when the motor is stopped by a brake.