SUVA SANGAM COLLEGE

YEAR 11

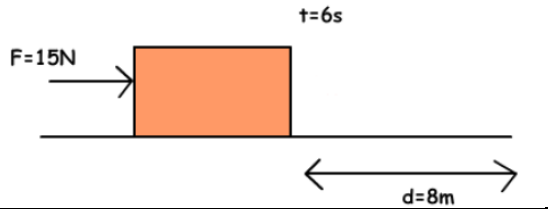
PHYSICS

WORKSHEET 11

STRAND 1 MECHANICS

NO.	**CONCEPT IN BRIEF: ENERGY** **WORK DONE BY A CONSTANT FORCE** • Work is defined as a force applied through a distance. Work done on an object by a constant force is the product of the object's displacement and the force acting parallel to the displacement. $\boxed{W = F \times d}$ • The SI unit for work is the **joule** (J).
1	(i) If a girl pushes a box with a 5.0 N force, and the box travels 2.0 m in the direction of her push, the amount of work done will be (ii) A 10 kg object experiences a horizontal force which causes it to accelerate at 5 m/s2 , moving it a distance of 20 m, horizontally. How much work is done by the force?
	CONCEPT IN BRIEF: ENERGY **POWER** • Power is the rate of work done in a unit of time. $\boxed{\text{Power} = \frac{\text{Workdone}}{\text{Time taken}}}$ • The unit of power is, J/s, however, we generally use watts (W). 1 J/s = 1 W

2. Find the power of the man who pushes a box 8 m with a force of 15 N in 6 seconds.



CONCEPT IN BRIEF: ENERGY

Potential Energy

- Gravitational potential energy is the energy stored in an object as the result of its vertical position or height. The energy is stored as the result of the gravitational attraction of the Earth for the object.
- The gravitational potential energy dependent on two variables. They are the mass of the object and the height to which it is raised.

- **PE_{grav} = mass x pull of gravity (g) x height PE = mgh**

- (gravitational field g = 10 N/kg on the Earth).

3. (i) A 45 kg girl jumps from a 0.4 m high stool onto the ground. How much potential energy does she lose?

(ii) A man slides a 25 kg box up a ramp onto the back of a lorry. If the ramp is 2 m long and the back of the lorry is 0.8 m above the ground how much potential energy does the box gain? All that matters is the VERTICAL height moved and not the length of the ramp.