PS Physics – Unit 2A – Part 1

Work, Power, and Machines

What is Work?

* In science, the word \_\_\_\_\_\_\_\_\_ has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than you may be familiar with.
* The scientific definition of \_\_\_\_\_\_\_\_\_\_ is: using a \_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_ an object a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (when \_\_\_\_\_\_\_\_\_\_\_\_ the force and the motion of the object are in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_).

Formula for work

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ = Force x \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ W=FD
	+ The unit of force is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ The unit of distance is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ The unit of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is newton-meters
	+ One newton-meter is equal to one \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ So, the unit of work is a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Power

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the \_\_\_\_\_\_\_\_\_\_\_\_\_ at which \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is done.
	+ Power = Work\*/Time

 \*(\_\_\_\_\_\_\_\_\_\_\_\_\_ x \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

* + The unit of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the \_\_\_\_\_\_\_\_\_\_\_\_\_.

Work and Power

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – done when a \_\_\_\_\_\_\_\_\_\_\_\_ acts on an \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the object moves
	+ Requires \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Man is not actually doing work when holding barbell above his head
		- Force is applied to barbell
		- If no movement, no work done
* Work Depends on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ If all \_\_\_\_\_\_\_\_\_\_\_\_ acts in same \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of motion = all \_\_\_\_\_\_\_\_\_\_\_ does work.
	+ If \_\_\_\_\_\_\_\_\_\_\_\_\_ applied force acts in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of motion = part \_\_\_\_\_\_\_\_\_\_\_\_\_\_ does work.
	+ If none of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the motion = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ does no work.

Calculating Work

* \_\_\_\_\_\_\_\_\_\_\_\_\_ = Force x \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* W = Fd
	+ Force = \_\_\_\_\_\_\_\_\_\_\_\_\_ x \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 🡪 F = ma
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (J) = SI unit for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Unit: J = N(m)
	+ Named after James Prescott Joule (1818 – 1889)
	+ Researched \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

What is Power?

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a measure of the \_\_\_\_\_\_\_\_\_\_\_\_\_ of doing \_\_\_\_\_\_\_\_\_\_\_\_\_
* More \_\_\_\_\_\_\_\_\_\_\_\_\_\_ = work at a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate
	+ Size of engine often indicates \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Can work at a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = Work/\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ P= W/t
	+ \_\_\_\_\_\_\_\_\_\_\_\_ (W) = SI unit for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Units: W = J/s

James \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hp) = another unit for power
	+ Equals ~\_\_\_\_\_\_\_\_\_\_ watts
	+ Defined by James \_\_\_\_\_\_\_\_\_\_\_\_\_ (1736- 1819)
		- Trying to describe power outputs of steam engines
			* Horses were most common used source of power in 1700s