

**ACROSS**

2. Energy of motion.
4. Gravitational potential energy = _____
6. A simple machine made of a bar that pivots about a fixed point.
7. _____ level: where PE is chosen to be zero, usually Earth's surface.
9. Ideal mechanical advantage
10. Transfer of energy by mechanical means.
11. = F_r / F_e
13. In an IDEAL machine: work _____ equals work output
14. Transforms PE to KE back to PE, over and over
16. No objects leave or enter.
18. The ability to do work or cause change.
20. Joule per second.
22. A device that makes work easier.
25. The rate of doing work; measured in watts.
26. If velocity doubles, KE increases by _____ times.
27. _____ mechanical advantage: work in = work out... no work lost to friction.
28. In an IDEAL machine: work input equals work _____
29. _____ potential energy = mgh
30. = $(W_o / W_i) \times 100\%$ or = $(MA / IMA) \times 100\%$

DOWN

1. Does WORK to grade assignments.
3. A measure of how much of the work input is changed to useful work output (%)
4. _____ energy: $KE + PE$
5. Not acted on by external forces.
7. Power is the _____ of doing work.
8. _____ of Energy: within a closed, isolated system, the energy may change form, but the total amount of energy is constant.
12. Unit of work or energy (N m)
15. Energy of position or state. Stored energy.
17. Work and energy are _____ quantities.
19. The input or _____ force (F_e) applied TO the machine.
21. The output or _____ force (F_r) applied BY the machine.
23. Mechanical _____ is the number of times a machine multiplies the input or effort force.
24. Law of conservation of _____: $KE_i + PE_i = KE_f + PE_f$