

Physical Science Final Exam Cheat Sheet

$$R_t = R_1 + R_2 + R_3 \dots$$

$$1/R_t = 1/R_1 + 1/R_2 + 1/R_3 + \dots$$

Energy in Joules, J:

$$V = IR$$

Kinetic: $\frac{1}{2}mv^2$ mass in kg, velocity in m/s
Gravitational Potential: mgh mass in kg, acceleration of gravity (9.8 m/s²), height in meters

Thermal: $s \cdot m \cdot \Delta t$ specific heat water 4.18 J/g-deg, mass in g, temp Celsius

Work: $F \cdot d$ Force in Newtons, distance in meters

Electric: $V \cdot q$ Voltage, charge in Coulombs

All: **Power * Time** Watts, seconds

Power in Watts, W:

All: **Energy/time** Joules, seconds

Electrical: I^2R amps, ohms

Electrical: $V \cdot I$ volts, amps

Zeroth Law of Thermodynamics:

Heat energy spontaneously flows from a high temperature source to a low temperature source.

First Law of Thermodynamics:

Energy is conserved, however it may be converted from one form to another. The energy of the Universe is a constant.

Second Law of Thermodynamics:

During any energy transformation, some of the energy will result in heat. Necessary Losses.