PHY 132: Things to Know:

The following things were deliberately left off of the "Tables and Formulas" handout, because you should know them.

Newton's 3rd law: If A exerts a force on B, then B exerts an equal and opposite force on A.

Weight: \( W = mg \)

Kinetic energy: \( KE = \frac{1}{2}mv^2 \)

Total mechanical energy: \( E = KE + U \) (\( U = \text{potential energy} \))

Period: \( T = \frac{1}{f} \) (\( T = \text{period}, f = \text{frequency} \))

Pressure: \( P = \frac{F}{A} \) (\( F = \text{force}, A = \text{area} \))

Ideal gas law: \( PV = nRT \)

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sec. 2:

Definition of potential: \( V = \frac{U_E}{q} \)

(Potential difference: \( \Delta V = \frac{\Delta U_E}{q} \))

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sec. 4:

Definition of current: \( I = \frac{dq}{dt} = \text{rate of positive charge flow} \)

\( I = \frac{q}{t} \) if current is constant

Definition of capacitance: \( C = \frac{Q}{V} \)

Ohm's law: \( V = IR \)

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sec. 7:

Direction of \( \vec{B} \) is direction a compass needle points.

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sec. 14:

Second law of thermodynamics: Entropy never spontaneously decreases.

When applied to heat flow, this is equivalent to: Heat flows spontaneously only from higher temperature to lower temperature objects.