Equations Sheet

Density:

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

Hooke's Law:

$$F = \text{k} \times \Delta x$$

$$F = mg$$

$$g = 9.8 \ \frac{m}{s^2} \simeq 10 \ \frac{m}{s^2}$$

Pressure:

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

Specific Heat Capacity :

$$Q = \text{Heat}$$

$$\Delta T = \frac{\text{Heat Transferred}}{\text{mass} \times \text{Heat Capacity}} = \frac{Q}{mc}$$

$$Q = mc\Delta T$$

$$\text{Water's heat capacity} = c_{\text{water}} = 1\frac{cal}{g°C}$$

Heat Required for Phase Transitions (Latent Heat):

$$L = \text{Latent Heat}$$

$$Q = mL$$

$$L_{\text{ice}-\text{water}} = 80 \ \frac{cal}{g} \ ,$$

$$L_{\text{water}-\text{steam}} = 540 \ \frac{cal}{g}$$

First Lay of Thermodynamics:

$$\Delta U = Q - W$$
Change in Internal Energy = Heat added − Work

Vibrations and Waves:

$$\text{Frequency} = \frac{1}{\text{Period}}$$

$$\text{Wave Speed} = \text{Frequency} \times \text{Wave Length}$$

$$\text{Wave Speed} = \frac{\text{Wave Length}}{\text{Period}}$$