Things to know by heart-Section 2. Physics with Health Science Applications.

	Equation	**units**
Kinetic Energy:	$\text{K.E.} \equiv \frac{1}{2}mv^2$	Joules, $\frac{kg \cdot m^2}{s^2}$
Density:	$\rho \equiv \frac{\text{mass}}{\text{volume}}$	$\frac{kg}{m^3}$
Pressure:	$P \equiv \frac{F}{A}$	Pascals , $\frac{N}{m^2}$
Pressure at depth:	$P_{depth} = \rho_{fluid} \cdot g \cdot depth$	Pascals, $\frac{N}{m^2}$
Area of a circle	$A = \pi r^2$	m^2, cm^2
	$10{,}000\ cm^2 = 1\ m^2$	
Buoyant force	$\text{B.F.} = \rho_{\text{fluid}} g V_{object\ \text{submerged}}$	N
Flow Rate:	$\text{Flow rate} \equiv \frac{\text{Volume}}{\text{time}}$	$\frac{m^3}{sec}, \frac{cm^3}{sec}$
	$FR = \frac{\Delta P \pi r^4}{8\eta L}$	
Coulomb's law:	$F = \frac{kq_1q_2}{d^2}$	Newtons
Coulomb's constant:	$k = 9 \times 10^9$	$\frac{Nm^2}{C^2}$
Charge of an electron:	$q_e = -1.6 \times 10 - 19$	Coulombs
Current:	$I \equiv \frac{q}{t}$	amps, $\frac{\text{coulombs}}{\text{second}}$
Voltage:	$V \equiv \frac{E}{q}$	Volts, $\frac{\text{joules}}{\text{coulomb}}$
Power	$Power \equiv \frac{E}{t}$ Power = IV	$\frac{joules}{sec}$, watts

Things to know by heart-Section 2. Continued

milli, m **x 10^{-3}**

micro, μ **x 10^{-6}**

Ohm's law $I = \frac{V}{R}$ amps, $\frac{\text{coulombs}}{\text{second}}$

Adding resistors
in <u>series</u>: $R = R_1 + R_2 + ...R_n$ ohms

Adding resistors
in <u>parallel</u>: Also known as finding the series equivalent of the parallel resistors

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + ...\frac{1}{R_n}$$ ohms

Magnetic field strength: $\beta \equiv \frac{|F|}{qV_\perp}$ Tesla, $\frac{N}{C \cdot \frac{m}{s}}$