# Gravity/Space quiz study guide

Conceptual understanding of force of gravity, eclipses, tides, orbiting speed, ellipses and eccentricity, Kepler's Laws

Calculations on HW problems and labs
Derive the equations for acceleration due to gravity, orbital speed, and escape speed

Know how to use the constants you're given and what they mean

Graph $T^2$ and $R^3$ and interpret the equation of the best-fit line

Don't need to:
> Memorize constants i.e. mass of the earth, universal gravitational constant, radius of the earth, etc.

Equations you will be given:

$$F_G = \frac{GM_1 m_2}{r^2} \qquad PE_G = \frac{-GM_1 m_2}{r} \qquad KE = \frac{1}{2}mv^2$$

$$r = R + h \qquad v_t = \frac{2\pi r}{T} = 2\pi r f \qquad \Sigma F_c = \frac{mv_t^2}{r}$$

Equations you will **not** be given

$$v_{esc} = \sqrt{\frac{2GM}{R}} \qquad v_{orb} = \sqrt{\frac{GM_1}{r}}$$