Gravitational field intensity	$\vec{g} = -G\frac{M}{r^2}\vec{u}_{12}$
Newton's Law: **Force between two mass**	$\vec{F} = -G\frac{m_1\, m_2}{r^2}\vec{u}_{12}$ $\vec{F} = m\,\vec{g}$
Gravitational potential	$V_g = -G\frac{M}{r}$
Gravitational potential energy	$E_P = -G\frac{m_1\, m_2}{r}, \quad E_P = m\,V_g$
Kinetic energy	$E_K = \frac{1}{2}m\,v^2$
Escape velocity	$v_E = \sqrt{\frac{2GM}{r}}$
Work to move a mass *m* from point *A* to point *B*.	$W = -\Delta E_P$ $W = -m\,(V_B - V_A)$
Orbits	$\vec{F}_g = \vec{F}_C \rightarrow G\frac{M\, m}{r^2} = m\frac{v^2}{r} \rightarrow v^2 = \frac{G\,M}{r}$ $T = \frac{2\,\pi\, r}{v}$ Kepler's third law: $T^2 = C\,r^3, \quad \frac{T_1^2}{T_2^2} = \frac{r_1^3}{r_2^3}$ Mechanical energy (total): $E_M = E_K + E_p = -G\frac{M\, m}{2r}$

Symbol	Magnitude	SI unit
g	Gravitational field intensity	N/kg = m·s^{-2}
$F,\ F_g,\ F_c$	Force, Gravitational force, Centripetal force	N
$m,\ M$	Mass	kg
r	Distance, orbital radius	m
V_g	Gravitational potential	J/kg
$E_M,\ E_K,\ E_P$	Mechanic energy, kinetic energy, potential energy	J
W	Work	J
$v,\ v_E$	Orbital speed, escape velocity	m/s
T	Orbital period	s
G	Gravitational Constant $= 6.673 \times 10^{-11}$	N·m^2·kg^{-2}
C	Kepler's third law constant	s^2·m^{-3}
$\vec{u}_{12}$	Unitary vector	-