**Chapter 7 - Circular Motion and Gravity**

|  |  |
| --- | --- |
| **Circular Motion:** | Symbols and units:  *F* - force (N)  *m* - mass (kg) (g/1000 = kg)  *a* - acceleration (m/s/s)  *μ* - coefficient of friction  *v* - tangential velocity (m/s)  *T* - period (s) |
| **Vertical Circle:**  Top: 1g – ride Bottom: 1g + ride  (m/s/s) ÷ 9.8 = (“g”s)  (“g”s ) x 9.8 = (m/s/s) | Inverted “g”s are negative  1 “g” = 9.8 m/s/s  a > 9.8 for water to stay in the bucket etc. |
| **Gravity:**    *G* - Universal Gravitation Constant  (6.67x10-11 Nm2/kg2) | Symbols and units:  *F* - force (N)  *m1* - the first mass (kg)  *m2* - the second mass (kg)  *r* - distance separating the centers (m)  *G* - Universal Gravitation Constant  (6.67x10-11 Nm2/kg2) |
| **Orbit: (r, m, v): Orbit: (r, m, T):**    Note: - the satellite mass cancels if ms << mc. | Symbols and units:  *mc* - central body mass (kg)  *ms* - satellite mass (kg)  *v* - orbital velocity (m/s)  *r* - orbital radius (m)  *T* - period (s)  *G* - Universal Gravitation Constant  (6.67x10-11 Nm2/kg2) |