Chapter 2 - Linear Kinematics

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| Formulas:  *x*  *v*  *t*    Δ*v*  *a*  *t* | Symbols and units:  *vavg* - average velocity (m/s)  *x* - displacement (m)  *t* - elapsed time (s)  *a* - acceleration (m/s/s)  *Δv* - change in velocity (m/s)  *vf* - final velocity (m/s)  *vi* - initial velocity (m/s) |
| Distance and time:  1 hr = 60 min = 3600 sec  1 day = 86400 sec  1 km = 1000 m ≈ .6214 mile  1 mile = 5280 ft = 1760 yards ≈ 1609 m  1 foot = 12 inches ≈ 30.48 cm  1 cm = 2.54 cm (defined)  1 m ≈ 3.281 ft  1 yard = 3 feet | Shortcuts: (mph = miles/hour)  1 m/s = 3.6 km/hr ≈ 2.237 mph ≈ 3.281 ft/s  1 mph ≈ 1.467 f/s (1.46666666…) ≈ 1.609 km/hr ≈ 0.4470 m/s  1 f/s = 0.3048 m/s ≈ 0.6818 mph (.6818181818…) ≈ 1.0973 km/hr  1 km/hr ≈ 0.2778 m/s ≈ 0.6214 mph ≈ 0.9113 ft/s |
| Free Fall Problems:  Making the direction down negative (-)  a = -9.8 m/s/s (always)  v at top = 0 (because.....)  If starts and ends at same elevation:  ½ total time to top  Total time in air = 2x time to top  vf = -vi |  |