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 sec1 day = 86400 sec1 km = 1000 m ≈ .6214 mile1 mile = 5280 ft = 1760 yards ≈ 1609 m1 foot = 12 inches ≈ 30.48 cm1 cm = 2.54 cm (defined)1 m ≈ 3.281 ft1 yard = 3 feet | Shortcuts: (mph = miles/hour)1 m/s = 3.6 km/hr ≈ 2.237 mph ≈ 3.281 ft/s1 mph ≈ 1.467 f/s (1.46666666…) ≈ 1.609 km/hr ≈ 0.4470 m/s1 f/s = 0.3048 m/s ≈ 0.6818 mph (.6818181818…) ≈ 1.0973 km/hr1 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 topTotal time in air = 2x time to topvf = -vi |  |