

Unit 01 – Vocabulary and Equations – Linear Motion

<p><u>Vocabulary:</u> nano (n) micro (μ) milli (m) centi (c) kilo (k) mega (M) giga (G) tera (T) SI (Système International d'units) Δ vector scalar position (x) distance (Δx) displacement (Δx) speed (v) velocity (v) frame of reference magnitude of acceleration (a) acceleration (a) instantaneous (velocity, acceleration) average (velocity, acceleration) (\bar{v}, \bar{a}) direct reading, slope, area under curve</p>	<p><u>Symbols:</u> Δ, x, v, t, Δx, Δv, Δt, a, f, i</p> <p><u>Equations & constants:</u> You get these on test:</p> $v = \frac{\Delta x}{\Delta t} \qquad a = \frac{\Delta v}{\Delta t}$ $\Delta x = v_0 \Delta t + \frac{1}{2} a t^2$ $v = v_0 + a \Delta t \quad (v \text{ means } v_f)$ $v_f^2 = v_i^2 + 2a \Delta x$ <p>60 mph = 27 m/s; 60 seconds = 1 min.; 60 min = 1hr.</p>
<p>Unit Objectives - Williams</p> <ol style="list-style-type: none"> 1. I understand all the vocabulary & math of this unit and all demos, videos, equations, and class assignments. 2. I have memorized the assigned SI prefixes for the year; I know how to substitute these prefixes for numbers and vice-versa. 3. I know how to use the EE button on my calculator for problems involving exponential notation 4. I will use three significant digits or more in my answers this year to make sure my final answers are within 1% of correct value 5. I know how to use T-charts to convert between units 6. I can use concept of dimensional analysis to see if my answer units make sense 7. I understand the subtle differences between distance and displacement and other vector quantities compared to their scalar equivalents 8. I understand that all motion is relative and is measured from some frame of reference 9. I know what the three types of motion graphs are and the three ways to get information from them 10. I can see motion graphs and critically describe what they reveal and what they do not reveal 11. I know the difference between average and instantaneous values 12. I can apply one-dimensional motion equations to solve realistic problems 13. I can do "catch up" problems applying relative motions <p>DuPage ROE Objectives</p> <ol style="list-style-type: none"> 101. I can distinguish between scalar and vector quantities. 102. I can differentiate between accelerated and constant velocity motion. 103. I can describe and analyze motion based on graphs, numeric data, words, and diagrams. 104. I can differentiate between speeding up, slowing down, and change in direction, based on the direction of velocity and acceleration. 	