

## Concepts/Topics

- Definition: distance, displacement, speed, velocity, acceleration; scalars vs. vectors
- Caution:  $d$ ,  $x$ ,  $r$ ,  $\ell$ , etc.
- Kinematics equations
- Initial velocity, final velocity, average velocity vs. instantaneous velocity
- Frames of references (choosing direction/origin - as in a drop problem; one particle in relation to another)
- PT, VT, AT graphs (and relationships between them)
- Slopes and areas under curves in graphs;  $y/x$  and  $y \cdot x$  in formulas

## Formulas and constants

$$d = x_0 + v_0t + \frac{1}{2}at^2$$

$$v = v_0 + at$$

$$v^2 = v_0^2 + 2a\Delta d$$

## Readings

*Physics - Principles with Applications* (2009), Chpt. 2

## Homework/Activities

- |                                       |            |
|---------------------------------------|------------|
| <input type="checkbox"/> Worksheet #1 | Due: _____ |
| <input type="checkbox"/> Worksheet #2 | Due: _____ |
| <input type="checkbox"/> Worksheet #3 | Due: _____ |
| <input type="checkbox"/> Worksheet #4 | Due: _____ |
| <input type="checkbox"/> Worksheet #5 | Due: _____ |
| <input type="checkbox"/> TBA: _____   | Due: _____ |

## Web Resources

Speed, velocity, and acceleration - Bozeman Science  
Average velocity - BrightStorm  
Instantaneous velocity - BrightStorm  
Acceleration - BrightStorm  
Linear Motion - BrightStorm  
Calculating average velocity or speed - Khan Academy  
Solving for time - Khan Academy  
Average velocity for constant acceleration - Khan Academy  
Impact velocity from given height - Khan Academy  
Acceleration - Khan Academy  
Constant velocity vs. constant acceleration - Timothy Palladino  
First kinematic equation - Timothy Palladino  
Finding initial velocity - Timothy Palladino  
Finding time from velocity and acceleration - Timothy Palladino  
1D-Kinematics - The Physics Classroom  
Acceleration - The Physics Classroom  
Velocity, speed, and motion - Physics4Kids  
Position, velocity, and acceleration - FearOfPhysics  
Moving man simulation - PhET

[www.youtube.com/watch?v=rZo8-ihCA9E](http://www.youtube.com/watch?v=rZo8-ihCA9E)  
[www.youtube.com/watch?v=mkIY86FZtm0](http://www.youtube.com/watch?v=mkIY86FZtm0)  
[www.youtube.com/watch?v=LkOgm6N0Vi0](http://www.youtube.com/watch?v=LkOgm6N0Vi0)  
[www.youtube.com/watch?v=Dalszqc4ezQ](http://www.youtube.com/watch?v=Dalszqc4ezQ)  
[www.youtube.com/watch?v=RsX0z0yQcb0](http://www.youtube.com/watch?v=RsX0z0yQcb0)  
[www.youtube.com/watch?v=oRKxmXwLvUU](http://www.youtube.com/watch?v=oRKxmXwLvUU)  
[www.youtube.com/watch?v=awzOvyMKeMA](http://www.youtube.com/watch?v=awzOvyMKeMA)  
[www.youtube.com/watch?v=MAS6mBRZZXA](http://www.youtube.com/watch?v=MAS6mBRZZXA)  
[www.youtube.com/watch?v=2ZgBJxT9pbU](http://www.youtube.com/watch?v=2ZgBJxT9pbU)  
[www.youtube.com/watch?v=FOkQszg1-j8](http://www.youtube.com/watch?v=FOkQszg1-j8)  
[www.youtube.com/watch?v=LQKzs9ejyTg](http://www.youtube.com/watch?v=LQKzs9ejyTg)  
[www.youtube.com/watch?v=vdX\\_iVxLrF0](http://www.youtube.com/watch?v=vdX_iVxLrF0)  
[www.youtube.com/watch?v=ZJtI186ltV4](http://www.youtube.com/watch?v=ZJtI186ltV4)  
[www.youtube.com/watch?v=WiUOgEvRkCs](http://www.youtube.com/watch?v=WiUOgEvRkCs)  
[www.physicsclassroom.com/Physics-Tutorial/1-D-Kinematics](http://www.physicsclassroom.com/Physics-Tutorial/1-D-Kinematics)  
[www.physicsclassroom.com/mmedia/kinema/accln.cfm](http://www.physicsclassroom.com/mmedia/kinema/accln.cfm)  
[www.physics4kids.com/files/motion\\_velocity.html](http://www.physics4kids.com/files/motion_velocity.html)  
[www.fearofphysics.com/Xva/xva.html](http://www.fearofphysics.com/Xva/xva.html)  
[phet.colorado.edu/en/simulation/moving-man](http://phet.colorado.edu/en/simulation/moving-man)