

## Strategies for Kinematics problem solving

- Consider the physics of the problem. Is it a kinematics problem? If so break out the proper tools (your kinematic relationships)
- Establish a coordinate system. In the beginning we'll use Cartesian and Polar coordinate systems. By convention  $\hat{u}$ ,  $\rightarrow$ , and  $\curvearrowright$  are "positive" in these systems.
- Establish the interval over which the problem exists in time, space or both.
- Establish what information is provided in the problem, i.e., what is given both explicitly and implicitly, and what you are required to find?
- Consider carefully how you will solve the problem before employing any math. You should be able to fully explain why you are using the tools you are using at each step.
- The sign of a vector, in an absolute sense, is less important than its relationship to other vectors. A negative value for an acceleration vector, for instance, does not mean that the object is slowing down!
- One is free to assign any values to vectors as long as the assignments are consistent to the chosen coordinate system.
- If the velocity vector and acceleration vectors have the same sign, the object is speeding up, if the signs are opposite, the object is slowing down
- Solve your problem
- Consider your answer(s). Are they realistic? Did the units carry through properly?