

Name: _____

Pre-lab #2: Straight Line Motion

1. For each of the two x vs. t graphs on page 2-1 of the lab manual (Fig. 1 and Fig. 2), draw the corresponding velocity vs. time graph and acceleration vs. time graph. For Fig. 2, assume that acceleration is constant. Don't worry about exact numerical correspondence, just show the general form of the graph.

2. In Part II of the lab you will measure the acceleration of a cart rolling down an incline. In the space below, draw a force diagram for the moving cart. That is, sketch a cart on an incline and draw and label an arrow (i.e., a force vector) for every force that is really acting on the cart. (Note that there will be a force associated with each interaction the cart participates in).

3. Ignoring friction, determine the cart acceleration for incline angles of 0, 30, and 90 degrees:

$$a_{incl}(\theta=0) = \underline{\hspace{2cm}} \quad a_{incl}(\theta=30) = \underline{\hspace{2cm}} \quad a_{incl}(\theta=90) = \underline{\hspace{2cm}}$$