



# **PROJECTILE MOTION**

## **Guide Questions**

**40% of the Written Report (Group Report) grade**

1. What is the shape of the vertical position vs. time graph ( $v_y$  vs.  $t$ )? What does the graph say about the motion of the ball along the vertical axis ( $y$ -axis)?
2. What is the relationship between the vertical component of the velocity  $v_y$  of the ball and time  $t$ ? What happens to the horizontal component of the velocity  $v_x$  of the ball as time increases?
3. If the vertical component of the velocity  $v_y$  of the ball is plotted as a function of time, what should be the shape of the graph? What physical quantity does the slope of the  $v_y$ -vs.- $t$  graph represent?
4. What is your average value of the acceleration of the ball along the  $y$ -axis ( $a_y$ )? What is the theoretical value of the acceleration of the ball along the  $y$ -axis?
5. Describe the motion of the projectile along the  $x$ -axis (horizontal) in terms of its velocity and acceleration. Describe the motion of the projectile along the  $y$ -axis (vertical) in terms of its velocity and acceleration.