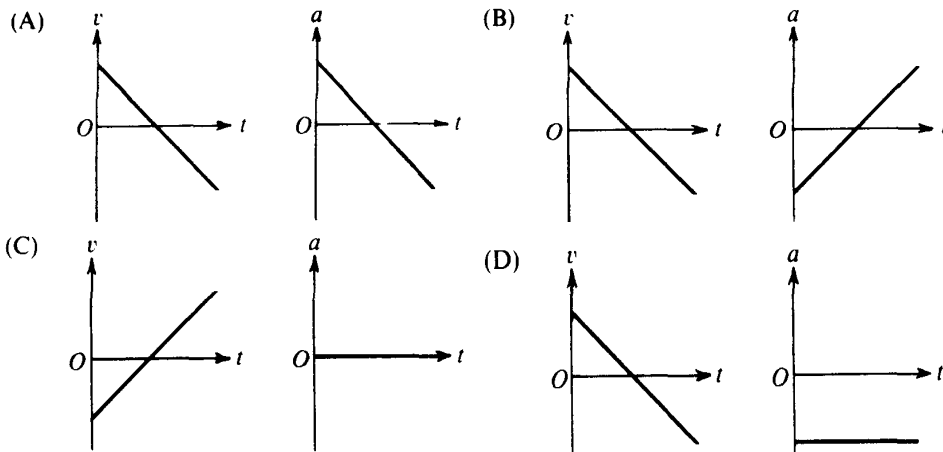


Name: _____

**AP Kinematics:
Full Projectile Homework**

Conceptual Questions:

1. Why is the velocity in the x-direction constant?
2. What happens to the velocity in the x- and y- directions at the projectile's highest point?
3. What happens to the acceleration in the x- and y- directions at the projectile's highest point?
4. A projectile is fired with initial velocity v_0 at an angle θ_0 with the horizontal. Which of the following pairs of graphs best represents the vertical components of the velocity and acceleration, v and a , respectively, of the projectile as functions of time?



5. Two arrows are launched at the same time with the same speed. Arrow A is released with an angle greater than 45.0° and arrow B is released with an angle less than 45.0° . They both land at the same spot on the ground. Which arrow will strike the ground first?
 - A. Arrow A arrives first
 - B. Arrow B arrives first
 - C. They both arrive together
 - D. Cannot be determined

Mathematical Questions:

6. A football is kicked at ground level with a speed of 18.0 m/s at an angle of 35.0° with respect to the horizontal. How much time later does it hit the ground?
(Consider, what is the y-position both when the ball is kicked and when it lands)
7. A projectile is fired with an initial speed of 65.2 m/s at an angle of 34.5° with respect to the horizontal above a long, flat firing range. Find the following:
- A. The maximum height reached by the projectile.
 - B. The total time in the air.
 - C. The range of the projectile.
 - D. The x- and y- components of the velocity, 1.50 s after the projectile was fired.
 - E. The magnitude and angle of the velocity, 1.50 s after the projectile was fired.