Name: _____ Date: _____

# Flying T-Shirt Physics Worksheet

## Position, Velocity & Acceleration

The position, velocity and acceleration of an object can be calculated using the following equation:

$$p = p_o + v_o \cdot t + 0.5 \cdot a \cdot t^2$$

where

$p$ = position (m)
$p_o$ = starting position (m)
$v_o$ = starting velocity (m/s)
$a$ = acceleration (m/s$^2$)
$t$ = time (s)

1. Calculate the distance traveled ($p$-$p_o$) by a ball after 6 seconds. Assume its initial velocity is 5 m/s and no acceleration.

2. Calculate the distance traveled ($p$-$p_o$) by a ball after 6 seconds. Assume its initial velocity is 5 m/s and an acceleration of 1 m/s$^2$.

3. Calculate the distance traveled ($p$-$p_o$) by a ball after 6 seconds. Assume its initial velocity is 5 m/s and an acceleration of -1 m/s$^2$. (The minus sign indicates the ball is slowing down as opposed to speeding up.)

4. Calculate the amount of time the ball has been moving if it traveled 50 meters, had an initial velocity of 5 m/s and an acceleration of 2 m/s$^2$. *Hint:* use the quadratic formula to solve.