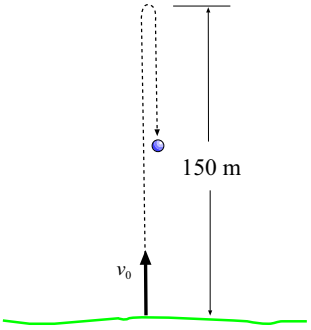
Name_____

Phys 2010 (NSCC), Fall 2007
Problem Set #2

1. An particle starts its motion at the origin with a velocity of $+2.5\,\frac{\text{m}}{\text{s}}$ and moves with an acceleration of $a = -0.55\,\frac{\text{m}}{\text{s}^2}$. (a) How much time elapses before it reverses direction? (b) How far will the particle move in that time?

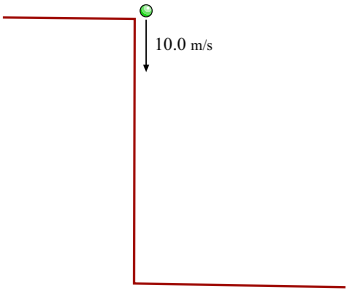
2. How long does it take a rock dropped (from rest) to fall 80 m? What is its speed when it has fallen this distance?

3. With what speed must you throw a rock straight upward so that it attains a maximum height of 150 m?



4. For the rock in problem 3, what is the total time it spends in flight?

5. If we stand at the edge of a cliff and throw a rock *downward* with a speed of 10.0 $\frac{\text{m}}{\text{s}}$, what is its velocity what it has fallen 75.0 m?



6. For the rock in problem 5, how long does it take to fall the 75.0 m?

7. If we drop a rock (from rest) on a strange planet and find that it falls 69.0 m in 5.00 s, what is the value of g on that planet?

8. A particle begins its motion with velocity components

$$v_x = +4.00\,\tfrac{\mathrm{m}}{\mathrm{s}} \qquad\qquad v_y = +5.00\,\tfrac{\mathrm{m}}{\mathrm{s}}$$

If it undergoes a constant acceleration with components

$$a_x = 0.0 \qquad\qquad a_y = -6.00\,\tfrac{\mathrm{m}}{\mathrm{s}^2}$$

what is its *speed* at $t = 2.0$ s?