

# Free Fall Day 4

Name: \_\_\_\_\_

$$d = v_i t + (0.5)at^2$$

$$v_f = v_i + at$$

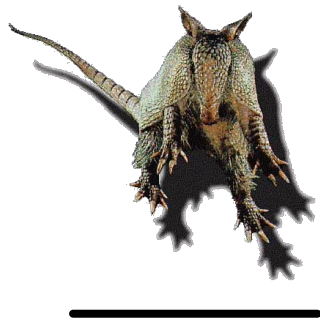
$$\text{Free Fall: } a = -10 \text{ m/s}^2$$



1. A ball is thrown upward at 30 m/s.
  - a) How long does it take to get to the top?
  - b) How long does it take to come back down from the top?
  - c) How high up did it go?



2. The Toy Projectile Launcher shoots a ball. It takes 2 seconds to get to the top, and 2 seconds to fall back down.
  - a) How fast did it shoot?
  - b) How fast is it going when it comes back down?



3. Tricky! An armadillo is scared and leaps directly upward. It lands 2 seconds later. How fast did it leap?

(Hint: 2 seconds is for the up and down combined.)



4. Tricky! How fast would Superman have to throw something upward so that it takes an entire day (24 hrs) to come back down?

(Hint1: How many seconds are there are in one day?)

(Hint2: An entire day is for the up and down combined.)