Upton Chuck is riding the Giant Drop at Great America. If Upton free falls for 2.60 seconds, what will be his final velocity and how far will he fall?

- Givens
  - T = 2.6 sec
  - V_i = 0 m/s
- Unknown
  - V_f
  - D
- Equation
  - Vf = g x t
  - D = .5 x g x t^2
- Substitute
  - Vf = -10 m/s^2 x 2.6 sec
  - D = .5 x (-10m/s^2) x (2.6 sec)^2
- Answer
  - Vf = -26 m/s (downwards)
  - D = -33.8 m

If Michael Jordan has a vertical leap of 1.29 m, then what is his takeoff speed and his hang time (total time to move upwards to the peak and then return to the ground)?

- Givens
  - D = 1.29 m
- Unknown
  - T

  Vi
- Equation
  - $D = .5 \times g \times t^2$
  - $Vf = Vi + g(t)$

- Substitute
  - $1.29m = .5 \times (-10m/s^2) \times (t)^2$
  - $.258 = t^2$
  - 0 m/s = Vi + (-10m/s2)(.5sec)
  - 0 m/s = Vi + (-5 m/s)
- Answer
  - T = .5 sec (up) = 1.02 sec (up and down)
  - Vi = 5 m/s

A baseball is popped straight up into the air and has a hang-time of 6.25 s. Determine the height to which the ball rises before it reaches its peak. (Hint: the time to rise to the peak is one-half the total hang-time.)

- Givens
  - T (up + down) = 6.25 sec
  - T (up) = 3.125 sec
- Unknown
  - D
- Equation
  - $D = .5 \times g \times t^2$
- Substitute
  - $D = .5 \times (-10 m/s^2) \times (3.125 sec)^2$
- Answer
  - D = 48.8 m
  - Vf = g x t
  - Vf = -10m/s2 (3.125 sec)
  - Vf = -31.25 m/s