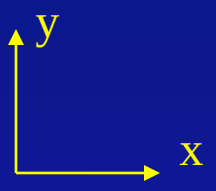
Free Fall



- Only force acting on object is GRAVITY
  - ➔Newton's 2nd Law $\Sigma F_y = ma_y$
  - ➔Force is Weight = mg (near surface of earth)
    - » $\Sigma F_y = ma_y$
    - » $-mg = ma_y$
    - » $a_y = -g$ **(- sign tells us it is in –y direction or down).**
- Acceleration is ALWAYS g downwards
  - ➔Position may be positive, zero or negative
  - ➔Velocity may be positive, zero or negative
  - ➔Acceleration is always g downwards
    - ➢ $y = y_0 + v_{y0}t - 1/2\ gt^2$
    - ➢ $v_y = v_{y0} - gt$
    - ➢ $v_y^2 = v_{y0}^2 - 2g(y-y_0)$