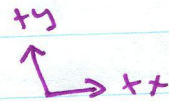


2. Convert $72.0 \frac{\text{km}}{\text{h}} \times \frac{1000 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ h}}{3600 \text{ s}} = 20 \text{ m/s}$

20 m/s
 40°
 $20 \sin 40^\circ = 12.86$
 $20 \cos 40^\circ = 15.32$



$$y(t) = y_0 + v_{0y}t + \frac{1}{2}at^2$$

y_0 call height thrown zero
 v_{0y} $+12.86$ throw up
 a -9.8 accelerates down

$$y(t) = 12.86t - 4.9t^2$$

caught at same height (chosen to be 0)

$$0 = 12.86t_f - 4.9t_f^2$$

$$0 = t_f(12.86 - 4.9t_f)$$

$$t_f = 0 \quad t_f = \frac{12.86}{4.9} = 2.62 \text{ s}$$

$$x(t) = 15.32t \quad x(t=2.62) = 15.32 * 2.62 = 40.14 \text{ m}$$

Player at 50m must run 9.86 m to be at place of ball
 in 2.62 s Player velocity $9.86 / 2.62 = 3.76 \text{ m/s}$ toward Coach

horizontal position when ball caught