



horizontal

$$R = V \cos \theta t$$

vertical

$$d = V \sin \theta t + \frac{1}{2} g t^2$$

relation

$$d = R \times \frac{3}{4}$$

unknowns d, R, t
solve for t, R

$$V \cos \theta t = R = \frac{4}{3} d = \frac{4}{3} \left(V \sin \theta t + \frac{1}{2} g t^2 \right)$$

$$\frac{1}{2} g t^2 + \left(V \sin \theta + \frac{3}{4} V \cos \theta \right) t = 0$$

$$t = 0, \frac{-2V}{g} \left(\sin \theta + \frac{3}{4} \cos \theta \right)$$

$$R = V \cos \theta \left(\frac{-2V}{g} \right) \left(\sin \theta + \frac{3}{4} \cos \theta \right)$$