

Answer on Question #76090-Physics-Mechanics-Relativity

A projectile has the same range R when the maximum height attained by it is either H1 or H2 then R, H1 and H2 can be related as?

Solution

$$R = u^2 \frac{\sin 2\phi}{g} = u^2 \frac{\sin (180 - 2\phi)}{g} = u^2 \frac{\sin 2(90 - \phi)}{g}$$

R is same for ϕ and $(90 - \phi)$.

$$H_1 = \frac{R \tan \phi}{4}$$

$$H_2 = \frac{R \tan(90 - \phi)}{4} = \frac{R \cot \phi}{4}$$

$$H_1 H_2 = \frac{R \tan \phi}{4} \frac{R \cot \phi}{4} = \frac{R^2}{16}$$

The relation is

$$R = 4\sqrt{H_1 H_2}$$

Answer provided by <https://www.AssignmentExpert.com>