

- 7 At time ts , a particle P is projected with speed 40 ms^{-1} at an angle θ above the horizontal from a point O on a horizontal plane and moves freely under gravity. The greatest height achieved by P during its flight is $H \text{ m}$ and the corresponding time is $T \text{ s}$.

(a) Obtain expressions for H and T in terms of θ . [2]

During the time between $t = T$ and $t = 3$, P descends a distance $\frac{1}{4}H$.

(b) Find the value of θ . [4]

This image shows a full page of primary-ruled paper. It features ten sets of horizontal dashed lines, each set consisting of three parallel lines. These lines are evenly spaced vertically across the entire page, providing a guide for handwriting practice. The background is white, and there are no margins or other markings present.

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