

Question #70933, Physics/Mechanics|Relativity

A plane is releasing a bomb while flying with 720km/h constant velocity. if the altitude of the plane is 980m. find its position due to initial position when the bomb strikes to the ground. take  $g=10\text{m/s}^2$

Solution:

The time between a bomb released and the bomb strikes can be determined as:

$$t = \sqrt{\frac{2h}{g}} = \sqrt{\frac{2 \cdot 980\text{m}}{10\text{m/s}^2}} = 14\text{s}$$

The horizontal velocity will be constant all the time before the bomb strike. Thus, it will fly:

$$l = v_0 \cdot t = 200\text{m/s} \cdot 14\text{s} = 2800\text{m}$$

The bomb will fly in a horizontal direction 2800 meters.

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