

Answer on Question #42587, Physics, Mechanics | Kinematics | Dynamics

A bomb is dropped from an airplane moving horizontally with a speed of 200km/h. If the air resistance is negligible, the bomb will reach the ground in 5sec when altitude of the plane is approximately?

Solution:

The speed of the plane does not affect the time to fall. The distance h that it falls in time t (when there is no initial vertical velocity component) is

$$h = \frac{gt^2}{2}$$

$g = 9.81 \text{ m/s}^2$ is acceleration.

Thus,

$$h = \frac{9.81 \cdot 5^2}{2} = 122.6 \approx 123 \text{ m}$$

Answer. $h = 123 \text{ m}$.