

Answer on Question #48631, Physics, Mechanics | Kinematics | Dynamics

A stone is dropped from a balloon moving upwards at 20m/s at a height at 105m. distance travelled by the stone, just before reaching the ground.....

A) 125 . B) 145m. C) 130m. D) 120m

Solution:

$a = g = -10 \text{ m/s}^2$ is acceleration.

The distance travelled upward is ($v_f = 0$)/

$$d_1 = \frac{v_f^2 - v_0^2}{2g} = \frac{0 - 20^2}{-2 * 10} = 20 \text{ m}$$

The distance down is

$$d_2 = d_1 + h$$

Thus, total distance is

$$d = 2d_1 + h = 2 * 20 + 105 = 145 \text{ m}$$

Answer: B) 145m