Answer on Question #72096-Physics-Other

An airplane flying 967 m above the ocean at 106 km/hr is supposed to drop a box of emergency supplies to the survivors of a shipwreck on an island. The instant before they hit the ground, how fast will the supplies be traveling?

Solution

Horizontal speed is

$$v_x = \frac{106}{3.6}\frac{m}{s}.$$

$$v^2 = 2gh$$

Vertical speed is

$$v_y = \sqrt{2gh} = \sqrt{2(9.81)(967)}\frac{m}{s}.$$

The speed will be:

$$v = \sqrt{\left(\frac{106}{3.6}\right)^2 + 2(9.81)(967)} = 141\frac{m}{s}.$$

Answer: $141\frac{m}{s}$.