Question #62945, Physics / Other

An f-18 flying at 785 km/h in horizontal flight drops a bomb. If the aircraft is at an altitude of 1550 m:

a. How much time elapse until the bomb hits the ground?

Solution

Since the aircraft is flying horizontally, the initial vertical speed of the bomb is zero. Thus:

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

$$t = \sqrt{\frac{2h}{g}} \; ;$$

$$t = \sqrt{\frac{2 \times 1550}{9.8}} = 17.8 \text{ s}$$

Answer: 17.8 s.