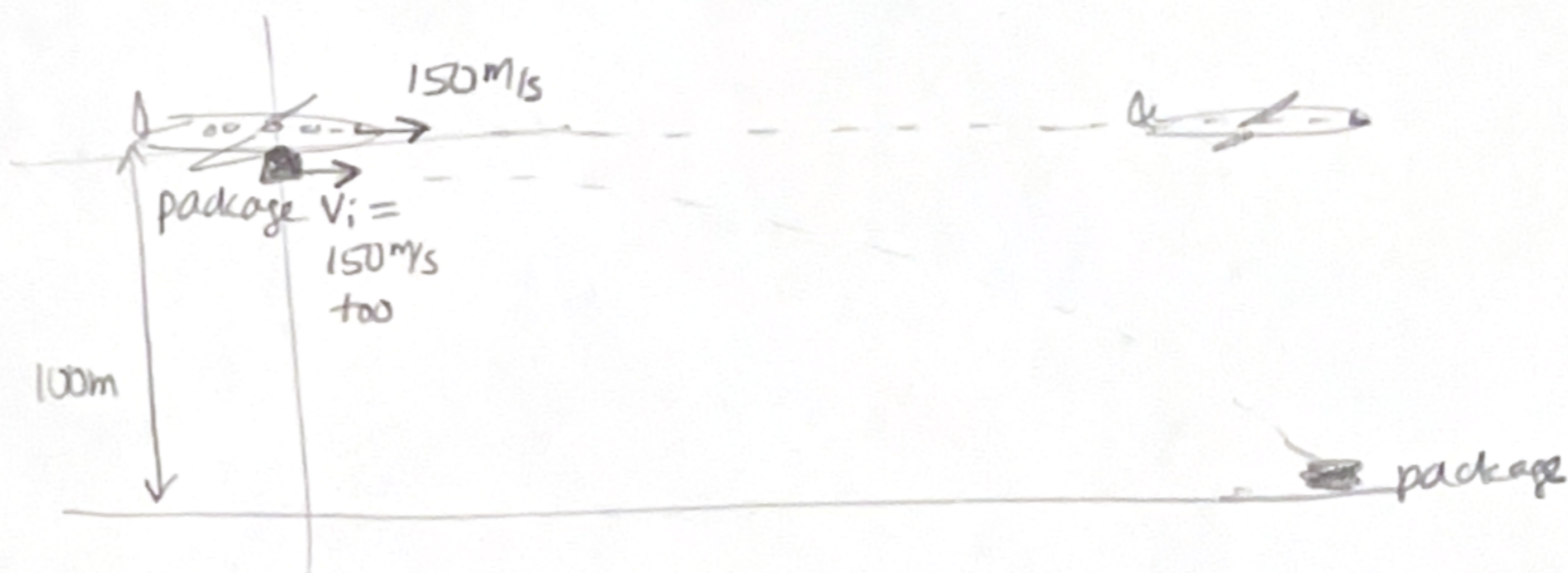


Ch 4 p. 106 #13



Interval: from $t=0$ to impact

Horiz

$$\Delta x =$$

$$V_x = 150 \text{ m/s}$$

$$\Delta t =$$

Vert

$$\Delta y = -100 \text{ m}$$

$$V_{iy} = 0$$

$$V_{fy} =$$

$$a_y = -9.8 \text{ m/s}^2$$

$$\Delta t =$$

I need to find the horizontal distance ^(Δx) the package travels before landing because that tells me how far before the landing point the package needs to be dropped.

If I find Δt from the vertical variables, then I can use the time to find Δx in the horizontal variables.

$$\Delta y = V_{iy} \Delta t + \frac{1}{2} a_y \Delta t^2$$

$$-100 \text{ m} = 0(\Delta t) + \frac{1}{2} (-9.8 \text{ m/s}^2) \Delta t^2$$

$$4.52 \text{ s} = \Delta t$$

$$\Delta x = V_x \Delta t$$

$$\Delta x = (150 \text{ m/s})(4.52 \text{ s})$$

$$\Delta x = 678 \text{ m}$$

$$\approx \boxed{680 \text{ m}}$$