

Butterfly $V_{\max} = 11 \text{ m/s}$

$$V = 6 \text{ m/s}$$

$$V_{\text{insect}} = \text{constant}$$

$$a = 1.4 \text{ m/s}^2$$

$$t = 3.0 \text{ s}$$

$$\Delta x = ?$$

$$\Delta x = (6)(3) + \frac{1}{2}(1.4)(3)^2$$

$$= 24.3 \text{ m}$$

$$V_{\max} = 3.17 \times 10^2 \text{ km/h} \quad \underline{\text{knowns}}$$

$$t = 8 \text{ s}$$

$$V_i = 3.17 \times 10^2 \text{ km/h}$$

$$V_i, V_f$$

$$V_f = 2.0 \times 10^2 \text{ km/h}$$

$$\underline{\text{UKS}}$$

$$\Delta x, a$$

$$\frac{8 \text{ s}}{1} \frac{1 \text{ hr}}{3,600 \text{ s}} = .0022 \text{ hr}$$

$$2.0 \times 10^2 = 3.17 \times 10^2 + a(.0022)^1$$

$$\begin{array}{r} -3.17 \times 10^2 \\ \hline \end{array} \quad \begin{array}{r} -3.17 \times 10^2 \\ \hline \end{array}$$

$$\frac{-117}{.0022} = \frac{a \cdot .0022}{.0022}$$

$$\frac{-117}{.0022} = a$$

$$a = -53,182 \text{ km/h}^2$$

$$\Delta x = 3.17 \times 10^2 (.0022) + \frac{1}{2} (-53,182) (.0022)^2$$

$$\Delta x = .57 \text{ km}$$

$$V_{\max} = 1.7 \times 10^2 \text{ km/h} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1 \text{ h}}{3600 \text{ s}} = 47.2 \text{ m/s}$$

$$a = +2.67 \text{ m/s}^2$$

$$t = 15 \text{ s}$$

$$\Delta x = 600 \text{ m}$$

knowns

$a, t, \Delta x$

unknown

V_f, V_i

$$\Delta x = V_i t + \frac{1}{2} a t^2$$

$$600 = V_i \cdot 15 + \frac{1}{2} (2.67) 15^2$$

$$600 = V_i \cdot 15 + 300.375$$

$$\frac{299.625}{15} = \frac{V_i \cdot 15}{15}$$

$$V_i = 19.975 \text{ m/s}$$

$$V_{\max} = \frac{970 \text{ km/hr} (1000)}{3600} = \frac{269.44 \text{ m/s}}{2}$$

$$a = 4.8 \text{ m/s}^2$$

$$V_{\text{int}} = 134.72 \text{ m/s}$$

$\Delta x = ?$

Knowns
a, v_i , v_f

Unknowns
t, Δx

$$V_f^2 = V_i^2 + 2a\Delta x$$

$$(269.44)^2 - (134.72)^2 + 2(4.8)\Delta x$$

$$\frac{4448.42}{9.6} = \frac{9.6\Delta x}{9.6}$$

$$\boxed{5671.7 + m = \Delta x}$$

$$\Delta X = 44.8 \text{ km} \times 1060 = \frac{44800 \text{ m}}{3600 \frac{\text{Vavg}}{\text{s}}} = 12.44 \text{ m/s}$$

$$t = 60 \text{ min}$$

$$V_i = 12.44 \text{ m/s} \quad V_f^2 = V_i^2 + 2a\Delta X$$

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

$$\Delta X = 20 \text{ m}$$

$$V_f = ?$$

$$V_f^2 = (12.44)^2 + 2(-2)(20 \text{ m})$$

$$V_f^2 = 154.75 + -80$$

$$\sqrt{V_f^2} = \sqrt{74.75}$$

$$V_f = 8.65 \text{ m/s}$$



$$V_f = ? \quad V_i = 0$$

$$\Delta x = -343$$

$$a = g = -9.81 \text{ m/s}^2$$

K	UK
V_i	V_f
Δx	t
g	

$$V_f^2 = V_i^2 + 2a\Delta x$$

$$V_f^2 = 0^2 + 2 \cdot (-9.81) \cdot (-343)$$

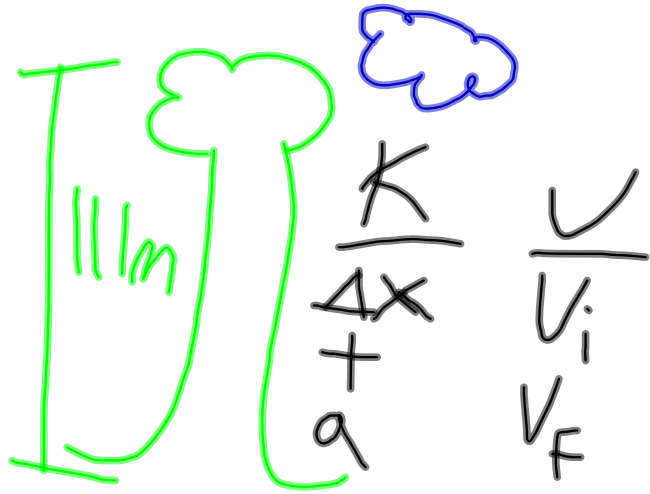
$$\sqrt{V_f^2} = \sqrt{6729.66}$$

$$V_f = 82.03 \text{ m/s}$$

$$\Delta x = -11 \text{ m}$$

$$t = 3.80 \text{ s}$$

$$v_i = ?$$



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

$$-11 = \overset{3.8v_i}{v_i(3.80\text{s})} +$$

$$-11 = 3.8v_i - 70.83$$
$$+70.83 \quad \vdots \quad +$$

$$\frac{5(-9.8)(3.80)^2}{-4.905 \quad 14.44}$$

$$\frac{\quad}{3.8} = \frac{3.8v_i}{3.8} \quad //$$