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$$1) a) V_{ox} = (9 \text{ m/s}) (\cos 40^\circ) = 6.89 \text{ m/sec}$$

$$V_{oy} = (9 \text{ m/s}) (\sin 40^\circ) = 5.79 \text{ m/sec}$$

$$t_s = \frac{V_{oy}}{g}$$

$$t_s = \frac{5.79 \text{ m/s}}{9.8 \text{ m/s}^2} = 0.59 \text{ sec}$$

$$H_{\max} = \frac{(-V_{oy})^2}{2g}$$

$$H_{\max} = \frac{(-5.79 \text{ m/s})^2}{2(-9.8 \text{ m/s}^2)} = 7.71 \text{ m}$$

$$V = 7.71 \text{ m} + 30 \text{ m/s} = 31.71 \text{ m/s}$$

$$t_c = \frac{\sqrt{2y}}{g}$$

$$t_c = \frac{\sqrt{2(31.71 \text{ m})}}{9.8 \text{ m/s}^2} = 2.54$$

$$t_v = t_s + t_c$$

$$t_v = 0.59 \text{ sec} + 2.54 = 3.13 \text{ sec}$$

$$x = V_{ox} t_v$$

$$x = (6.89 \text{ m/s})(3.13 \text{ sec})$$

$$x = 21.57 \text{ m}$$

$$2) a) V_{oy} = (20 \text{ m/s})(\sin 37^\circ) = 12.03 \text{ m/s}$$

$$H_{\max} = \frac{(-V_{oy})^2}{2g}$$

$$H_{\max} = \frac{(-12.03 \text{ m/s})^2}{2(-9.8 \text{ m/s}^2)}$$

$$H_{\max} = 7.38 \text{ mts.}$$

$$b) t_s = -\frac{V_{oy}}{g}$$

$$t_s = \frac{-12.03 \text{ m/s}}{-9.80 \text{ m/s}^2} = 1.23 \text{ seg}$$

$$t_v = 2t_s$$

$$t_v = 2(1.23 \text{ seg}) = t_v = 2.46 \text{ seg.}$$

$$c) V_{ox} = (20 \text{ m/s})(\cos 37^\circ) = 15.97 \text{ m/s}$$

$$X = V_{ox} t_v$$

$$X = (15.97 \text{ m/s})(2.46 \text{ seg})$$

$$X = 39.29 \text{ mts}$$

$$3) a) V_{oy} = (20 \text{ m/s})(\sin 50^\circ) = 15.32 \text{ m/s}$$

$$t_s = \frac{-V_{oy}}{g}$$

$$t_s = \frac{-15.32 \text{ m/s}}{-9.8 \text{ m/s}^2} = 1.56 \text{ seg.}$$

$$t_v = 2(1.56 \text{ seg})$$

$$\underline{t_v = 3.12 \text{ seg}}$$

$$b) H_{\max} = \frac{(-V_{oy})^2}{2g}$$

$$H_{\max} = \frac{(-15.32 \text{ m/s})^2}{2(9.8 \text{ m/s}^2)}$$

$$\underline{H_{\max} = 11.97}$$

$$c) V_{ox} = (20 \text{ m/s})(\cos 50^\circ) = 12.86 \text{ m/s}$$

$$X = V_{ox} t_v$$

$$X = (12.86 \text{ m/s})(3.12 \text{ seg})$$

$$\underline{X = 40.12 \text{ m}}$$

4) Los ejercicios a, b y c son las mismas respuestas que la del 3.

$$d) v_{oy} = (20 \text{ m/s}) (\sin 40^\circ) = 12.86 \text{ m/s}$$

$$t_s = \frac{12.86 \text{ m/s}}{9.8 \text{ m/s}^2} = 1.31 \text{ seg}$$

$$t_v = 2t_s$$

$$t_v = 2(1.31 \text{ seg}) = 2.62 \text{ seg}$$

$$v_{ox} = (20 \text{ m/s}) (\cos 40^\circ) = 15.32 \text{ m/s}$$

$$X = v_{ox} t_v$$

$$X = (15.32 \text{ m/s}) (2.62 \text{ seg})$$

$$X = 40.14 \text{ m}$$

$$5) a) v_{oy} = (30 \text{ m/s}) (\sin 40^\circ) = 19.29 \text{ m/s}$$

$$t_s = \frac{-19.29 \text{ m/s}}{-9.8 \text{ m/s}^2}$$

$$t_s = 1.97 \text{ seg} \quad b)$$

$$t_v = 2t_s$$

$$t_v = 2(1.97 \text{ seg}) = 3.94 \text{ seg} \quad a)$$

$$c) H_{\max} =$$

$$H_{\max} = \frac{(-19.29 \text{ m/s})^2}{2(9.8 \text{ m/s}^2)}$$

$$H_{\max} = 18.98 \text{ m}$$

$$D) V_{ox} = (30 \text{ m/s}) (\cos 40^\circ) \quad 22.98 \text{ m/s}$$

$$X = V_{ox} T_v$$

$$X = (22.98 \text{ m/s}) (3.94 \text{ seg})$$

$$X = \underline{90.59 \text{ m}}$$

$$6) a) V_{oy} = (40 \text{ m/s}) (\sin 45^\circ) \quad 28.28 \text{ m/s}$$

$$t_s = \frac{-V_{oy}}{g}$$

$$t_s = \frac{-28.28 \text{ m/s}}{-9.8 \text{ m/s}^2} = 2.86 \text{ seg}$$

$$t_v = 2 t_s$$

$$t_v = 2(2.86 \text{ seg})$$

$$t_v = \underline{5.77 \text{ seg}}$$

$$b) H_{\max} = \frac{(-V_{oy})^2}{2g}$$

$$H_{\max} = \frac{(-28.28 \text{ m/s})^2}{2(9.8 \text{ m/s}^2)}$$

$$H_{\max} = \underline{40.80 \text{ m}}$$

$$c) V_{ox} = (40 \text{ m/s}) (\cos 45^\circ) \quad 28.28 \text{ m/s}$$

$$X = V_{ox} T_v$$

$$X = (28.28 \text{ m/s}) (5.77 \text{ seg})$$

$$X = \underline{163.18}$$