$\vec{A} = 75\hat{j}$

$\vec{B} = 250\hat{i}$

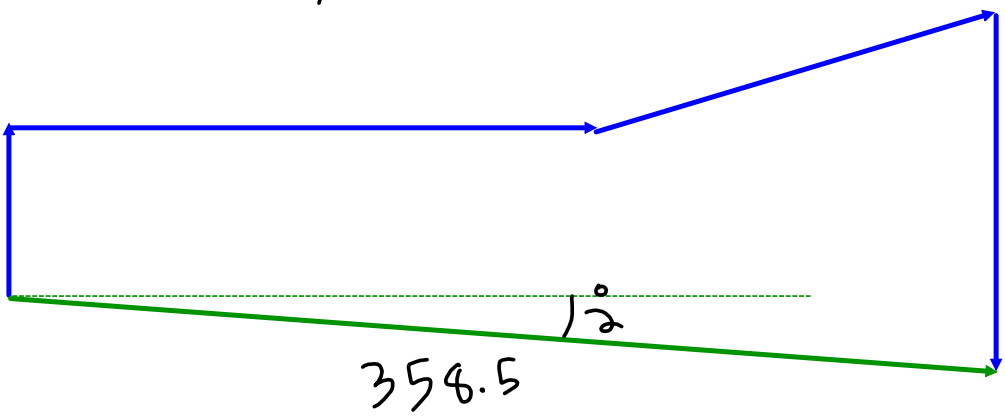
$\vec{C} = 125\cos(30^\circ)\hat{i} + 125\sin(30^\circ)\hat{j}$

$\vec{D} = -150\hat{j}$

$\vec{A} + \vec{B} + \vec{C} + \vec{D} = ?$

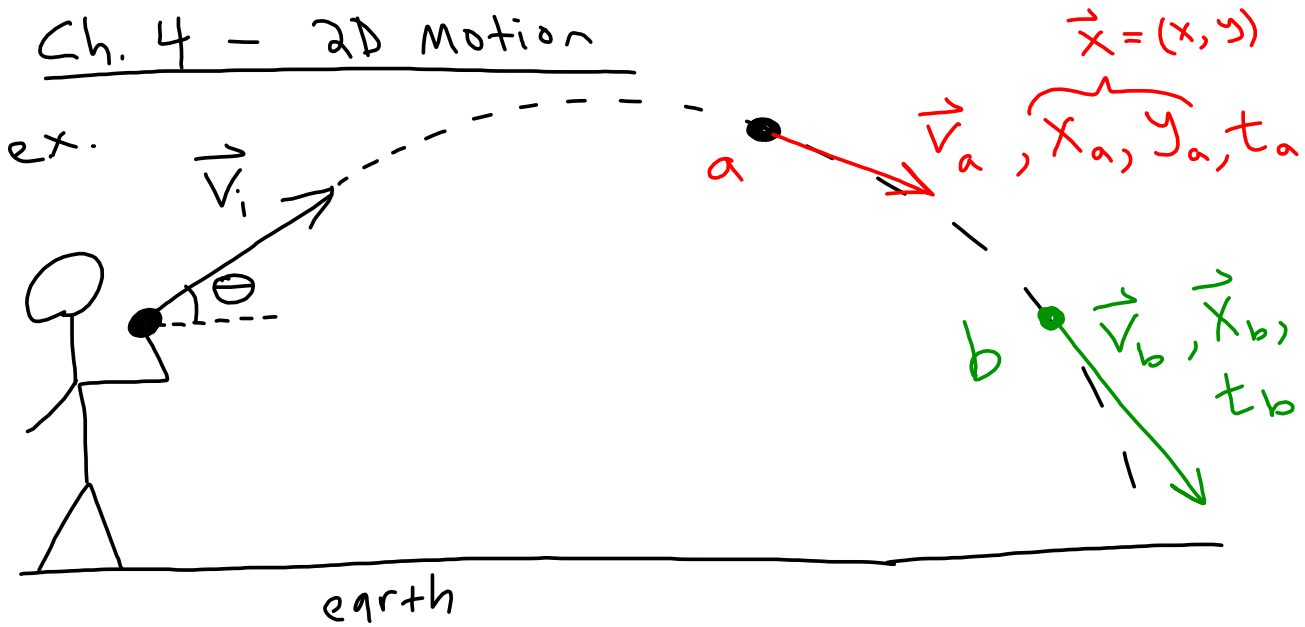
$= 358.3\hat{i} - 12.5\hat{j}$

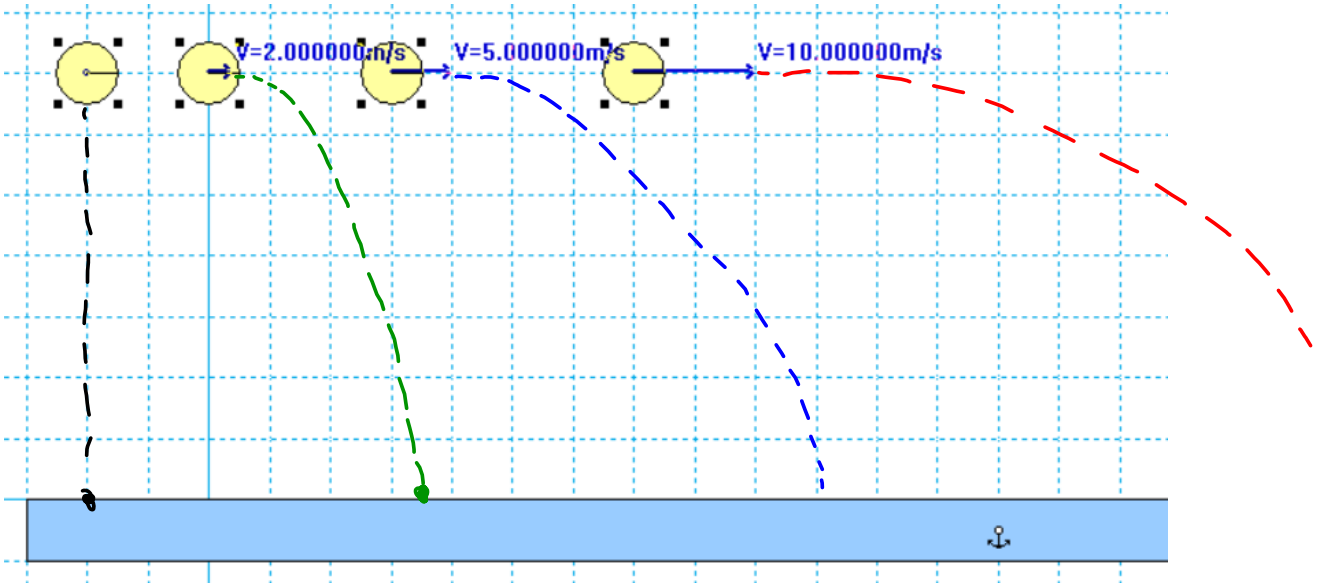
or, $r = 358.5$, $\theta = -2^\circ$



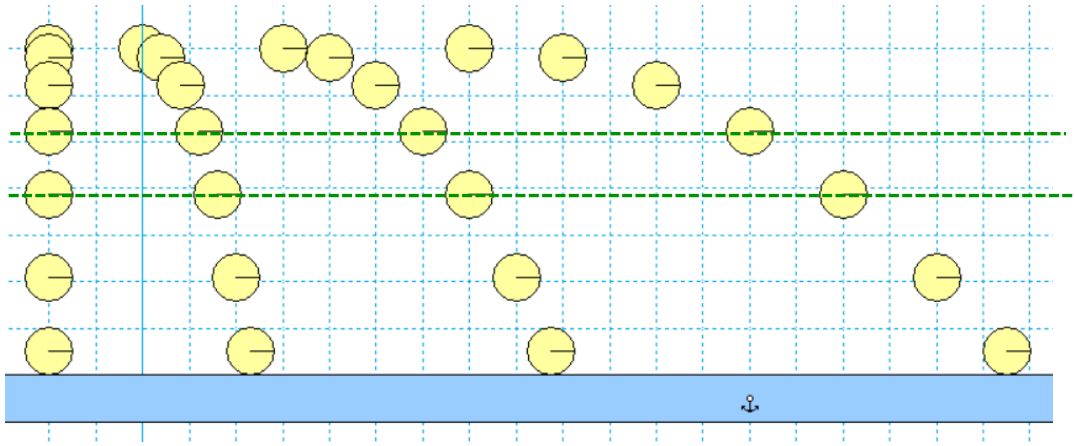
Ch. 4 – 2D Motion

ex.

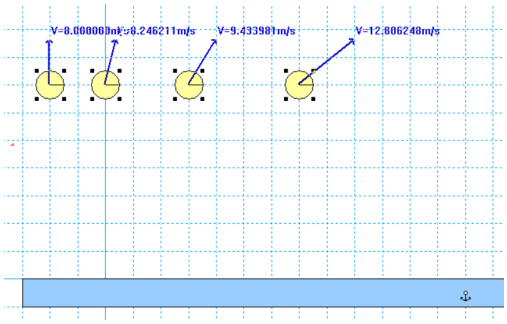


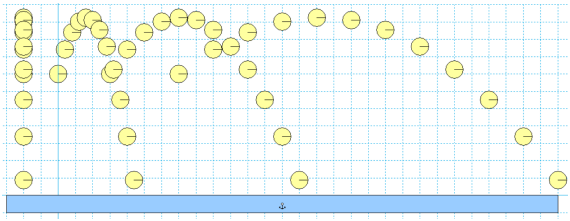


Which hits the ground first?



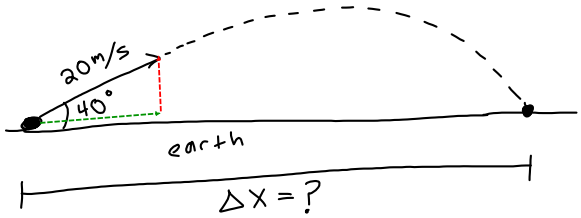
tie !





Still a tie!

Example



y – direction

$y_i = 0$

$y_f = 0$

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

$v_i = (20\frac{m}{s})\sin(40^\circ)$

$v_f = ?$

$t = ?$

$y_f = y_i + v_i t + \frac{1}{2} a t^2$

$0 = 0 + (12.86\frac{m}{s})t - 4.9t^2$

$t = \frac{12.86}{4.9} = 2.6\,s$

x – direction

$t = 2.6\,s$

$x_i = 0$

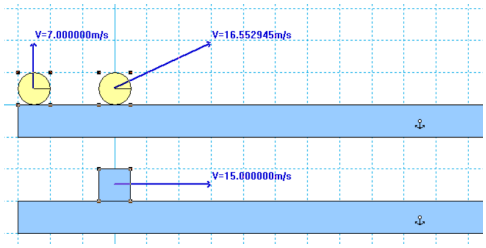
$x_f = ?$

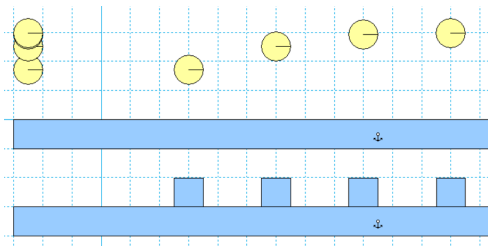
$a_x = 0$

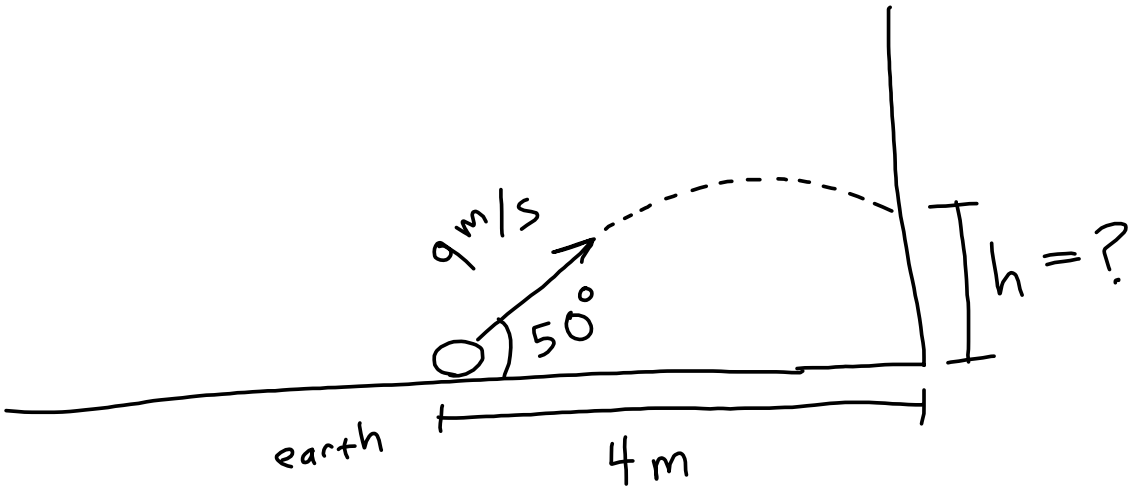
$v_i = (20\frac{m}{s})\cos(40^\circ) = 15.3\frac{m}{s}$

$\Rightarrow x_f = (15.3\frac{m}{s})(2.6s)$

$\Delta x = 39.8\ m$







$h = 2.42\ m$