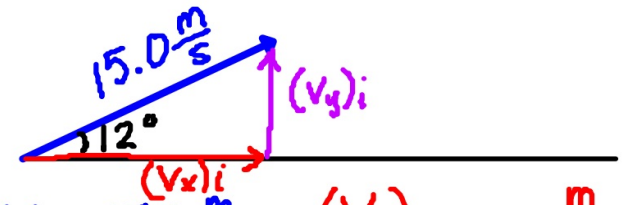
A ball is thrown with an angle of 12.0° to the horizon with a speed of 15.0 m/s. What are the horizontal and vertical components of its velocity?



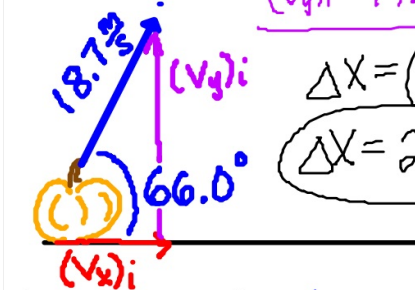
$V_i = 15.0\ \frac{m}{s}$ $\quad (V_x)_i = \_\_\_\ \frac{m}{s}$ $\quad (V_y)_i = \_\_\_\ \frac{m}{s}$

$\theta = 12°$ $\quad (V_x)_i = V_i \cos\theta$ $\quad (V_y)_i = V_i \sin\theta$

$= (15.0)\cos(12)$ $\quad (V_y)_i = (15.0)\sin(12)$

$(V_x)_i = 14.7\ m/s$ $\quad (V_y)_i = 3.12\ \frac{m}{s}$

A pumpkin is launched with a velocity of 18.7 m/s at an angle of 66.0° to the horizontal. How far from its launch location does it land?



$(V_x)_i = V_i \cos\theta$

$= (18.7)\cos(66)$

$(V_x)_i = 7.606\ \frac{m}{s}$

$(V_y)_i = V_i \sin\theta$

$= (18.7)\sin(66)$

$(V_y)_i = 17.083\ \frac{m}{s}$

$\Delta X = (V_x)_i\, t$

* Need to solve for t first. *

$\Delta y = (V_y)_i t + \frac{1}{2} a t^2$

$(0m) = (17.083)t + \frac{1}{2}(-9.8)t^2$

$0 = 17.083t - 4.9t^2$

$-17.083t \quad -17.083t$

$\frac{-17.083t}{-4.9} = \frac{-4.9t^2}{-4.9}$

$3.4863 = t$

$\Delta X = (7.606)(3.4863)$

$\Delta X = 26.5\ m$

$V_i = 18.7m$ $\quad X_i = 0m$

$(V_x)_i = 7.606\ \frac{m}{s}$ $\quad y_i = 0m$

$(V_y)_i = 17.083\ \frac{m}{s}$ $\quad t_i = 0s$

$V_f = X$

$(V_x)_f = 7.606\ \frac{m}{s}$

$(V_y)_f = X$

$X_f = \_\_\_$

$y_f = 0m$

$t_f = X$