A ball is thrown with an angle of 12 degrees to the horizon with a speed of 15m/s. What are it's vertical and horizontal components

Solution:

$V_0 = 15\frac{m}{s} -$ initial velocity of the stone;

$\alpha = 12° -$ angle, above the horizontal, of the stone's initial velocity;

Horizontal and vertical components from the right triangle ABC:

$\Delta ABC: \cos\alpha = \frac{V_x}{V_0}$

$V_x = V_0 \cdot \cos\alpha = 15\frac{m}{s} \cdot \cos 12° = \ 14.7 \ \frac{m}{s}$

$\Delta ABC: \sin\alpha = \frac{V_y}{V_0}$

$V_y = V_0 \cdot \sin\alpha = 15\frac{m}{s} \cdot \sin 12° = \ 3.1 \ \frac{m}{s}$

Answer: Horizontal component : $V_x = \ 14.7 \ \frac{m}{s}$; vertical component $V_y = 3.1 \ \frac{m}{s}$