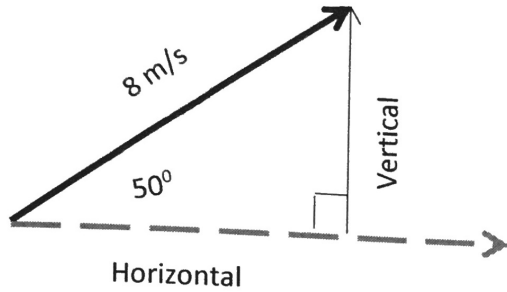


Component Vectors:

Any vector can be broken into two component vectors: one horizontal and one vertical.

Example:



Horizontal component vector

$$\cos 50^\circ = \text{horizontal} / 8\text{m/s}$$

$$\text{Horizontal} = (8\text{m/s})(\cos 50^\circ) = 5.14 \text{ m/s}$$

Vertical Component vector

$$\sin 50^\circ = \text{vertical} / 8\text{m/s}$$

$$\text{Vertical} = (8\text{m/s})(\sin 50^\circ) = 6.13\text{m/s}$$

Formulas:

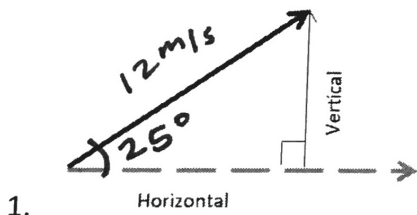
Horizontal:

$$V_x = V_i \cos \theta$$

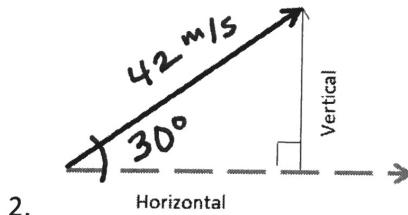
Vertical:

$$V_{iy} = V_i \sin \theta$$

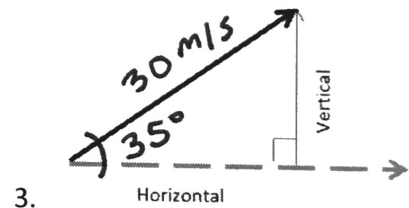
You try:



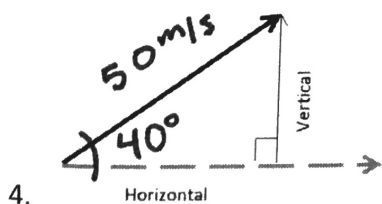
$$V_x = 12 \text{ m/s} \cos 25^\circ = \underline{10.9 \text{ m/s}}$$
$$V_{iy} = 12 \text{ m/s} \sin 25^\circ = \underline{5.07 \text{ m/s}}$$



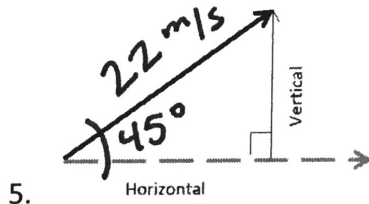
$$V_x = 42 \text{ m/s} \cos 30^\circ = \underline{36.4 \text{ m/s}}$$
$$V_{iy} = 42 \text{ m/s} \sin 30^\circ = \underline{21 \text{ m/s}}$$



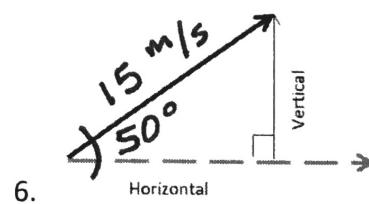
$$V_x = 30 \text{ m/s} \cos 35^\circ = \underline{24.6 \text{ m/s}}$$
$$V_{iy} = 30 \text{ m/s} \sin 35^\circ = \underline{17.2 \text{ m/s}}$$



$$V_x = 50 \text{ m/s} \cos 40^\circ = \underline{38.3 \text{ m/s}}$$
$$V_{iy} = 50 \text{ m/s} \sin 40^\circ = \underline{32 \text{ m/s}}$$



$$V_x = 22 \text{ m/s} \cos 45^\circ = \underline{15.6 \text{ m/s}}$$
$$V_{iy} = 22 \text{ m/s} \sin 45^\circ = \underline{15.6 \text{ m/s}}$$



$$V_x = 15 \text{ m/s} \cos 50^\circ = \underline{9.6 \text{ m/s}}$$
$$V_{iy} = 15 \text{ m/s} \sin 50^\circ = \underline{11.5 \text{ m/s}}$$