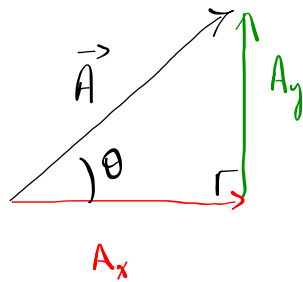


# Components of a Vector



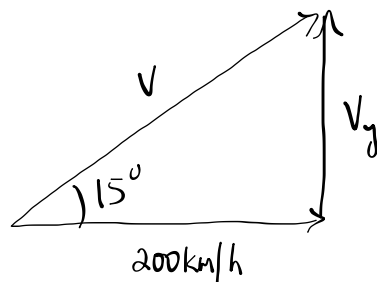
$$\cos \theta = \frac{A_x}{A}$$

$$A_x = A \cos \theta$$

$$\sin \theta = \frac{A_y}{A}$$

$$A_y = A \sin \theta$$

4.



$$a) \quad \cos 15^\circ = \frac{200 \text{ km/h}}{v}$$

$$v = \frac{200 \text{ km/h}}{\cos 15^\circ}$$

$$v = 207 \text{ km/h}$$

$$b) \quad \tan 15^\circ = \frac{V_y}{200 \text{ km/h}}$$

$$V_y = (200 \text{ km/h}) \tan 15^\circ$$

$$V_y = 53.58 \dots \text{ km/h}$$

$$V_y = 14.89 \text{ m/s}$$

$$\vec{v} = \frac{\Delta d}{\Delta t} \quad (\text{vertically})$$

$$\Delta t = \frac{\Delta d}{\vec{v}}$$

$$\Delta t = \frac{1000 \text{ m [up]}}{14.89 \text{ m/s [up]}}$$

$$\Delta t = 67 \text{ s}$$