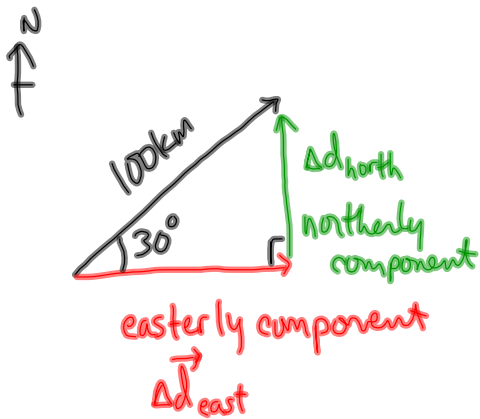
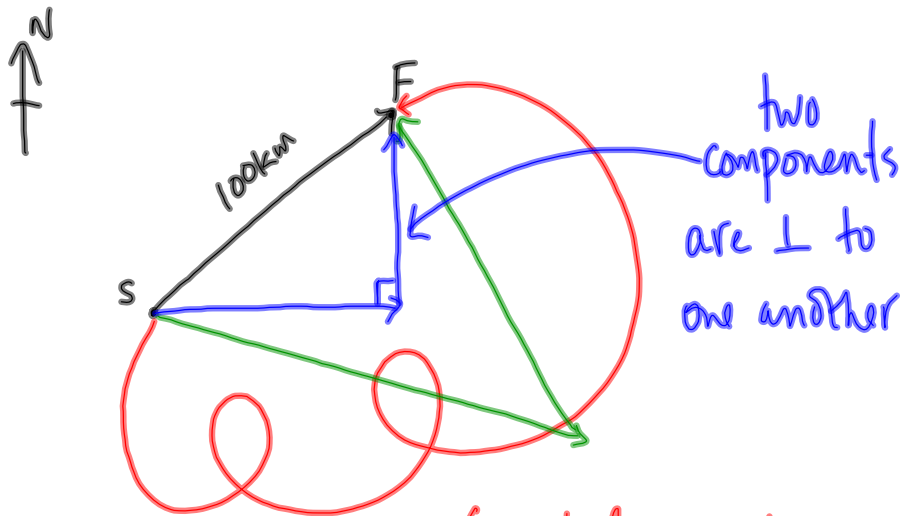


Components of Vectors

The displacement of an airplane from its starting point is 100 km [E30°N]. Determine the components of its displacement in the easterly and northerly directions.



Easterly Component:

$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\cos 30^\circ = \frac{|\vec{\Delta}_{\text{east}}|}{100 \text{ km}}$$

$$|\vec{\Delta}_{\text{east}}| = 100 \text{ km} \cos 30^\circ$$

$$|\vec{\Delta}_{\text{east}}| = 87 \text{ km}$$

Northerly Component

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 30^\circ = \frac{|\vec{\Delta}_{\text{north}}|}{100 \text{ km}}$$

$$|\vec{\Delta}_{\text{north}}| = 50 \text{ km}$$