

• What does "Resolution" mean

The term resolution or resolve means **breaking down** any vector into **two perpendicular fragments or components**.

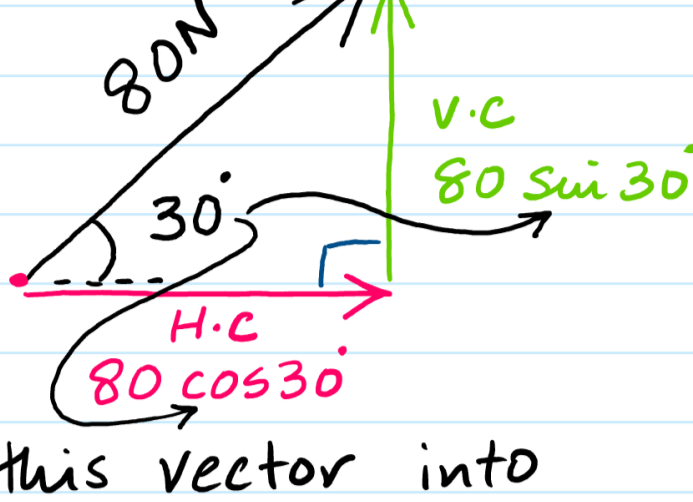
Generally the two components are referred to as

① **Horizontal component (H.C)**

② **Vertical component (V.C)**

example of resolution is given below.

Q.1



Resolve this vector into horizontal & vertical components

find the H.C

find the V.C

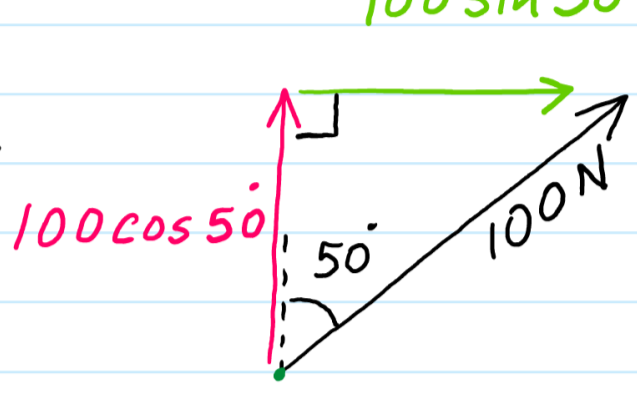
$$\cos 30^\circ = \frac{\text{H.C}}{80}$$

$$\sin 30^\circ = \frac{\text{V.C}}{80}$$

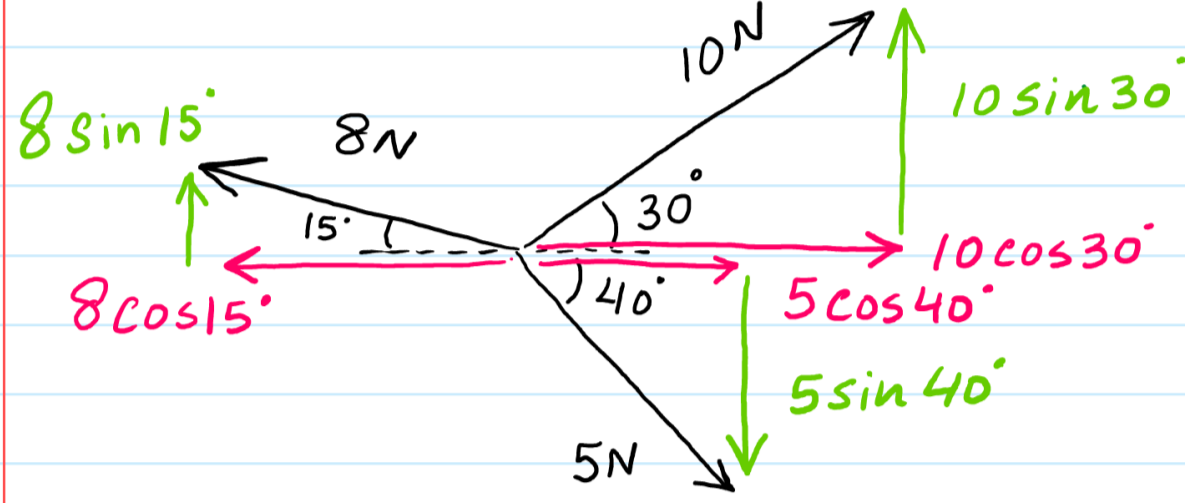
$$\text{H.C} = 80 \cos 30^\circ$$

$$\text{V.C} = 80 \sin 30^\circ$$

Q2



Q.3



(i) By resolving find the **resultant** of these vectors in the **horizontal plane**

$$\rightarrow 10 \cos 30^\circ + 5 \cos 40^\circ - 8 \cos 15^\circ$$

$$= 4.8 \text{ N}$$

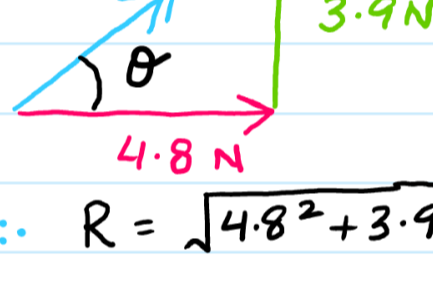
(ii) By resolving find the **resultant** of these vectors in the **vertical plane**

$$+ \uparrow 10 \sin 30^\circ + 8 \sin 15^\circ - 5 \sin 40^\circ$$

$$= 3.9 \text{ N}$$

(iii) Hence find the **(overall) resultant** of all these forces

• To find the (overall) Resultant we can now apply **HEAD TO TAIL RULE** as shown below.

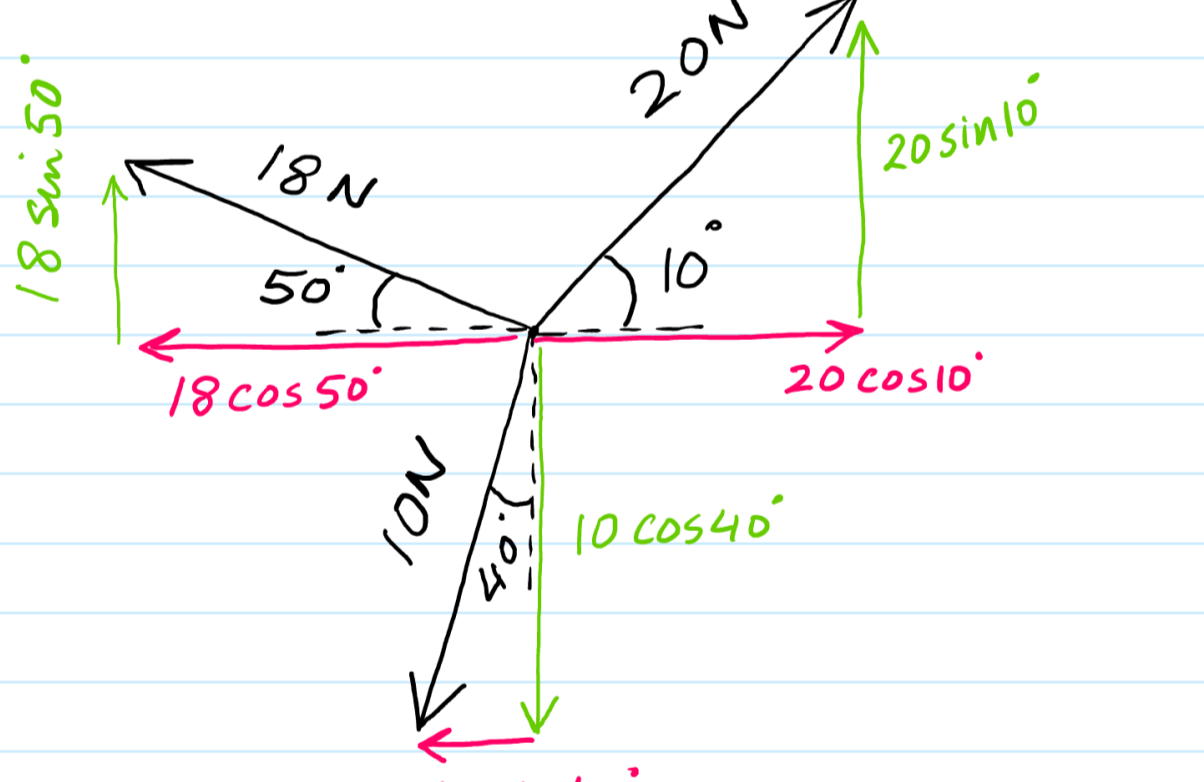


$$\text{magnitude} \therefore R = \sqrt{4.8^2 + 3.9^2} = 6.2 \text{ N}$$

direction with the horizontal

$$\tan \theta = \frac{3.9}{4.8} = 39^\circ$$

Q4 Find the **magnitude** of the resultant in the given diagram



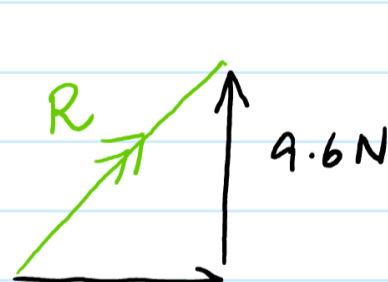
$$\rightarrow -18 \cos 50^\circ + 20 \cos 10^\circ - 10 \sin 40^\circ$$

$$= 1.7 \text{ N}$$

$$+ \uparrow 20 \sin 10^\circ + 18 \sin 50^\circ - 10 \cos 40^\circ$$

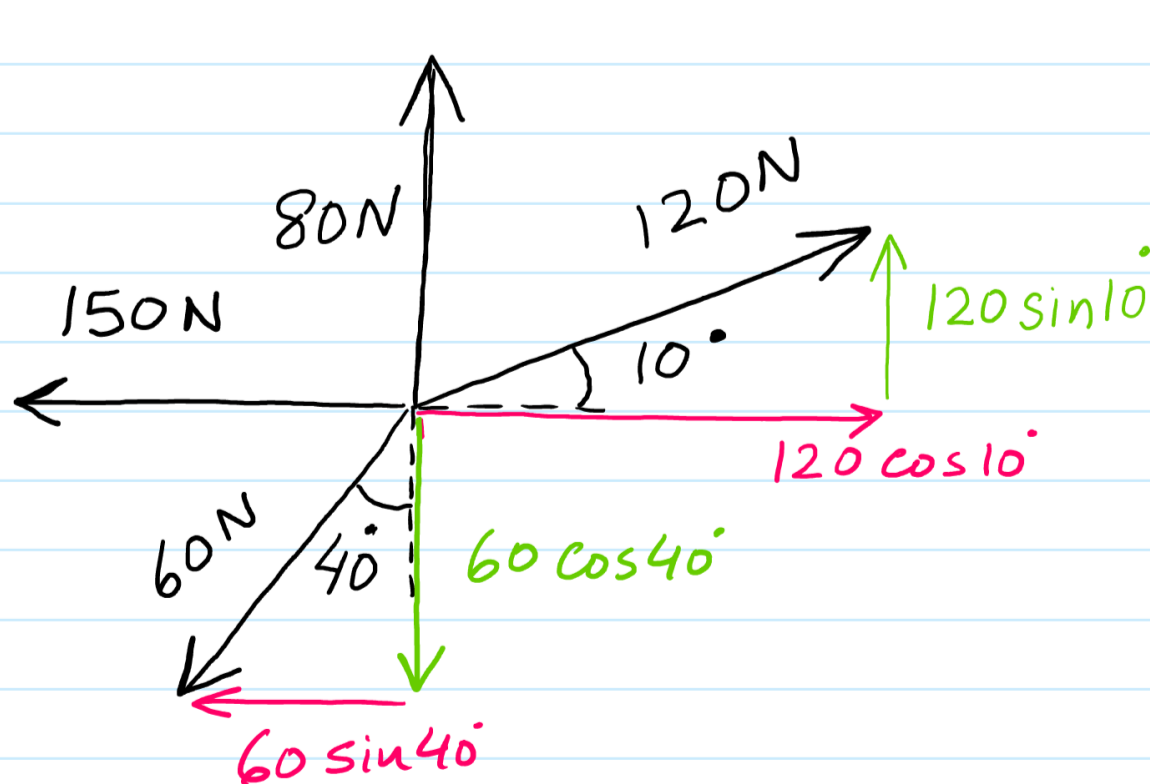
$$= 9.6 \text{ N}$$

Resultant head to Tail



$$R = 9.7 \text{ N}$$

Q.5



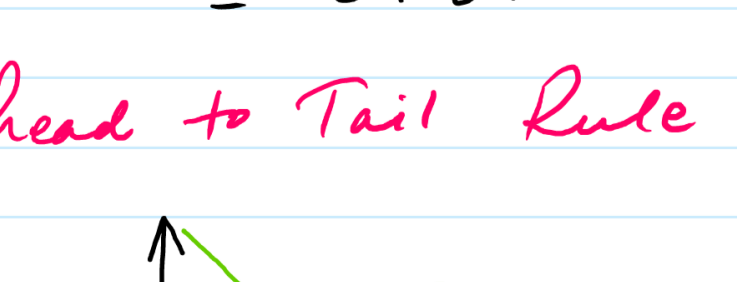
$$\rightarrow 120 \cos 10^\circ - 150 - 60 \sin 40^\circ$$

$$= -70.4 \text{ N}$$

$$+ \uparrow 80 + 120 \sin 10^\circ - 60 \cos 40^\circ$$

$$= 54.8 \text{ N}$$

head to Tail Rule



$$R = 89.3 \text{ N}$$