

• What does "Resolution" mean

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

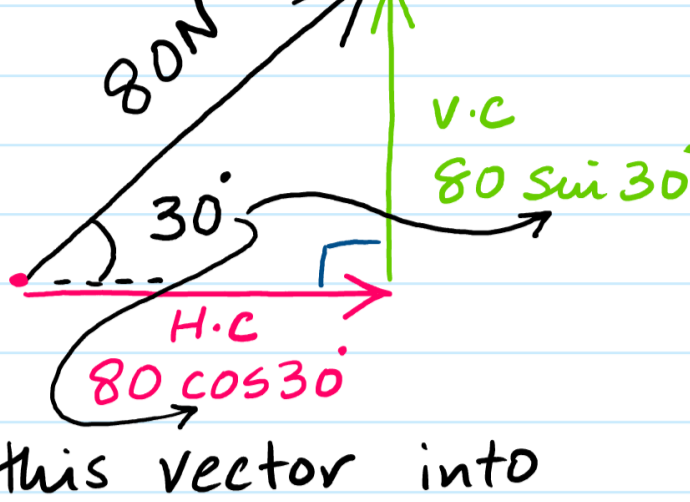
Generally the two components are referred to as

① **Horizontal component (H.C)**

② **Vertical component (V.C)**

example of resolution is given below.

Q.1

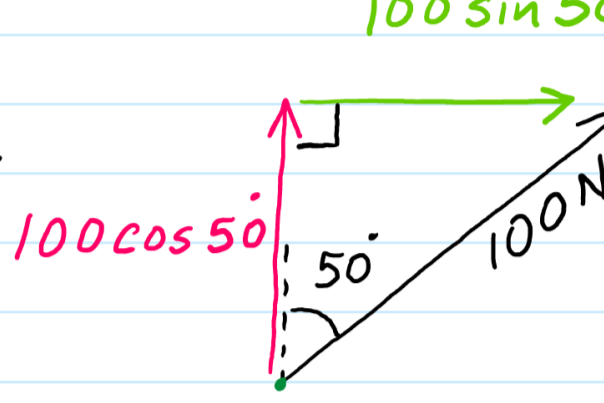


Resolve this vector into horizontal & vertical components

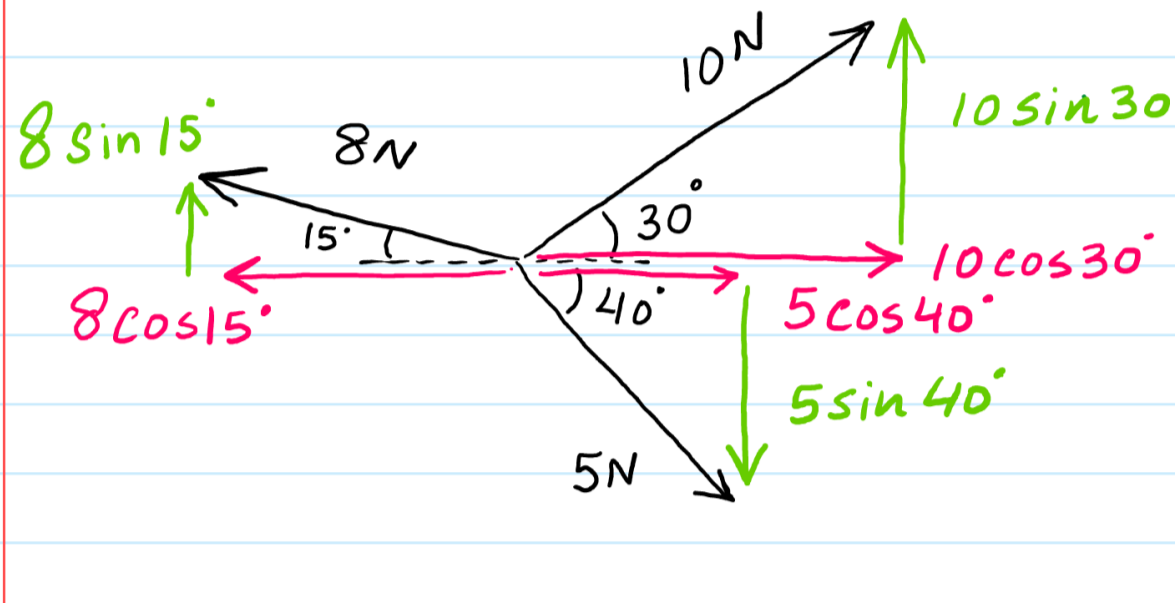
find the H.C  
 $\cos 30^\circ = \frac{H.C}{80}$   
 $H.C = 80 \cos 30^\circ$

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

Q2



Q.3



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

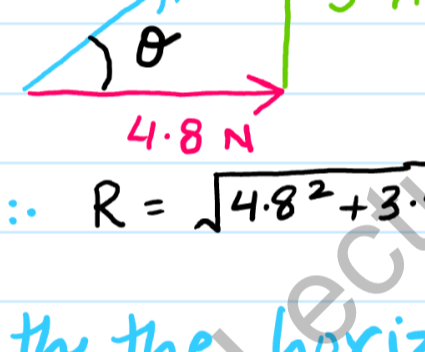
+  $\rightarrow 10 \cos 30^\circ + 5 \cos 40^\circ - 8 \cos 15^\circ = 4.8 \text{ N}$

(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.

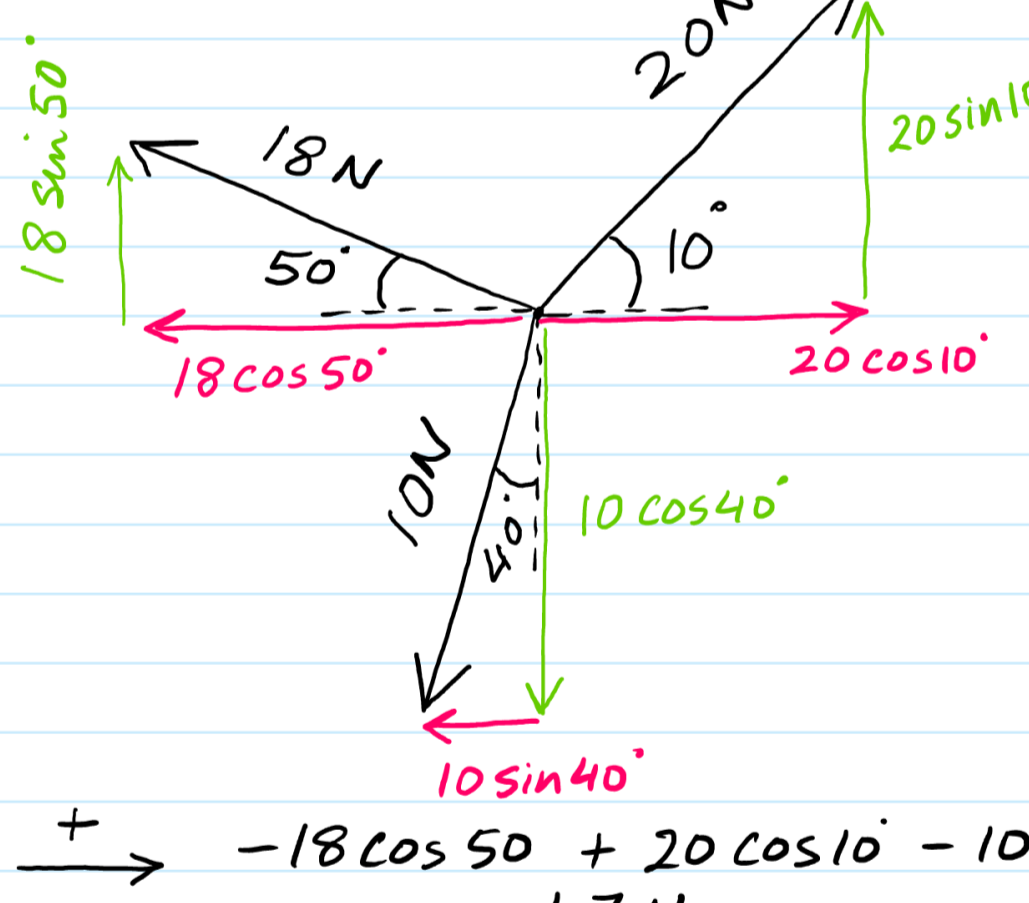


magnitude  $\therefore R = \sqrt{4.8^2 + 3.9^2} = 6.2 \text{ N}$

direction with the horizontal

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

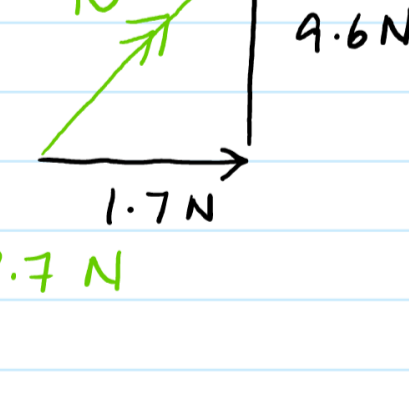
Q4 Find the **magnitude** of the resultant in the given diagram



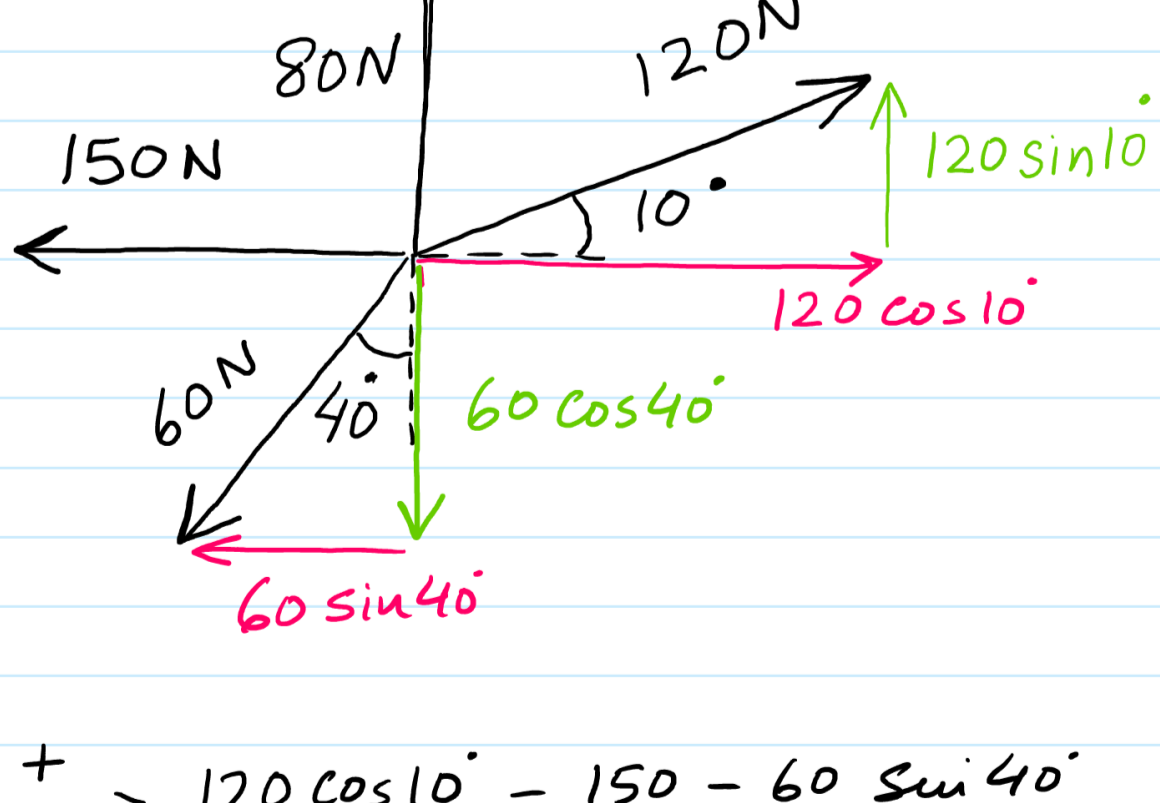
+  $\rightarrow -18 \cos 50 + 20 \cos 10 - 10 \sin 40 = 1.7 \text{ N}$

+  $\uparrow 20 \sin 10 + 18 \sin 50 - 10 \cos 40 = 9.6 \text{ N}$

Resultant head to Tail



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**

