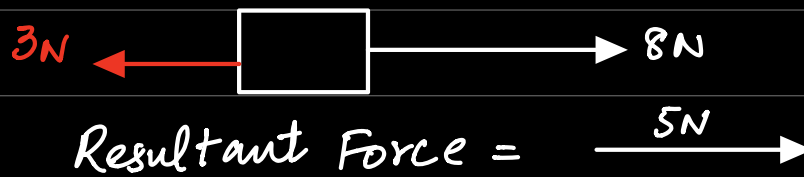
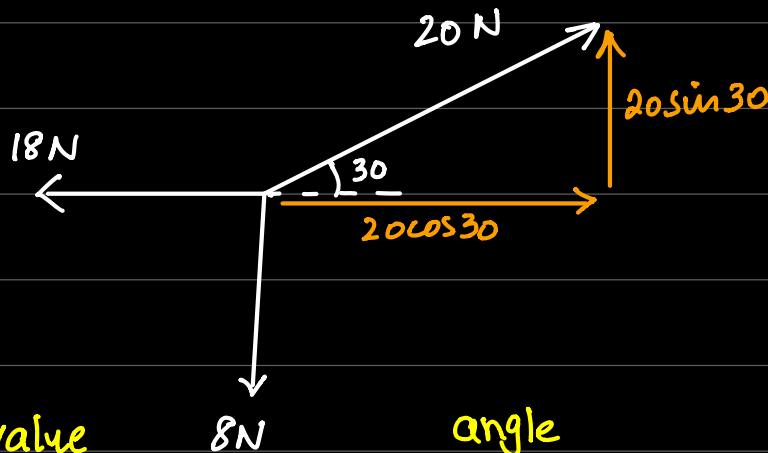


RESULTANT FORCE

UNBALANCED FORCES.



Q:



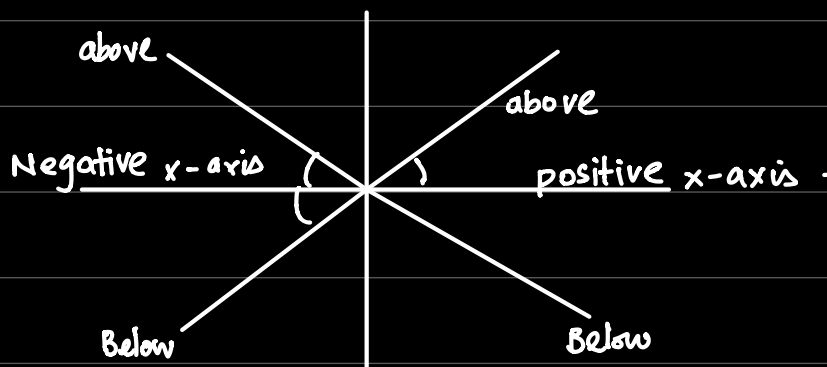
Find value magnitude and angle direction of Resultant force.

Horizontal Analysis	vertical Analysis	RESULTANT.
$R_x = \leftarrow 0.6795$	$R_y = \uparrow 2$	$R^2 = 2^2 + 0.6795^2$ <div>$R = 2.112$ MAGNITUDE</div>

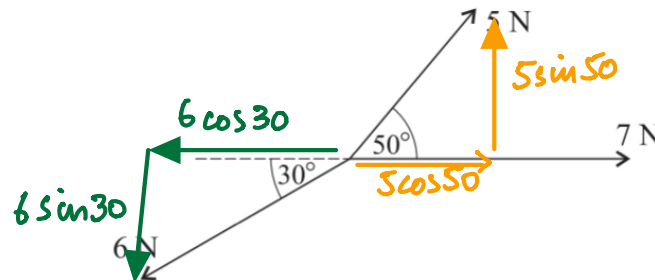
Final Ans: Resultant is
2.112 N acting at
 71.235° above negative
x-axis.

$$\tan \theta = \frac{2}{0.6795}$$

$\theta = 71.235^\circ$ above
negative x-axis



3

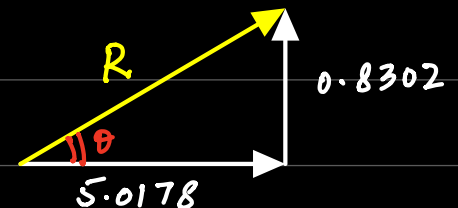
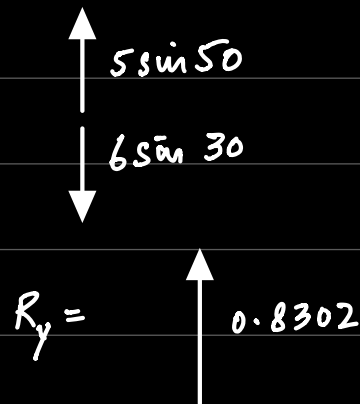
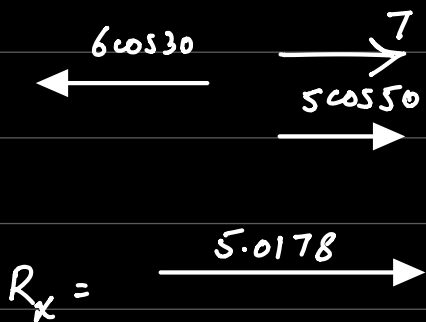


Three ~~coplanar~~ forces act at a point. The magnitudes of the forces are 5 N, 6 N and 7 N, and the directions in which the forces act are shown in the diagram. Find the magnitude and direction of the resultant of the three forces. [6]

HORIZONTAL ANALYSIS

VERTICAL ANALYSIS

RESULTANT

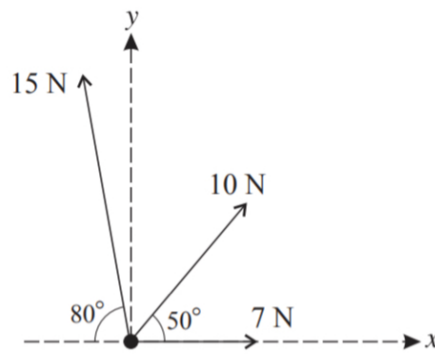


$$R^2 = 0.8302^2 + 5.0178^2$$

$$R = 5.175$$

$$\tan \theta = \frac{0.8302}{5.0178}$$

$$\theta = 9.395^\circ \text{ above positive x-axis.}$$



Forces of magnitudes 7 N, 10 N and 15 N act on a particle in the directions shown in the diagram.

(i) Find the component of the resultant of the three forces

(a) in the x -direction, $= R_x$ (Horizontal Analysis)

(b) in the y -direction. $= R_y$ (Vertical Analysis)

[3]

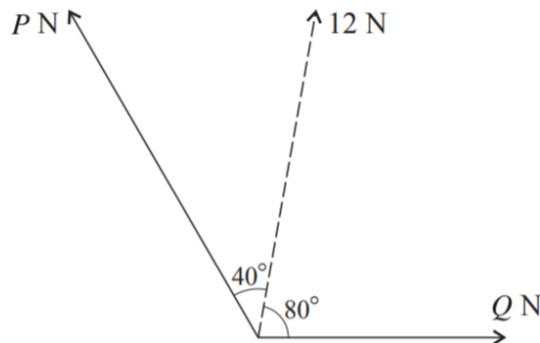
(ii) Hence find the direction of the resultant. (Resultant).

[2]

ADVANCED VARIATION: RESULTANT IS GIVEN ON THE QUESTION DIAGRAM.

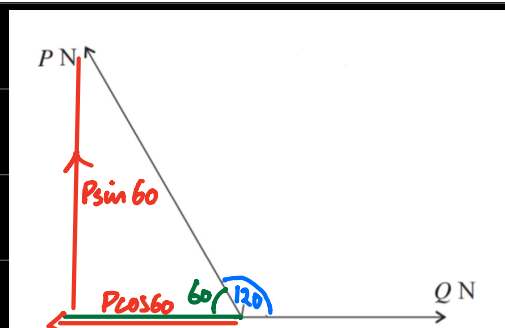
METHOD: REMOVE THE RESULTANT FROM MAIN DIAGRAM AND MAKE SAME 3 COLUMNS.

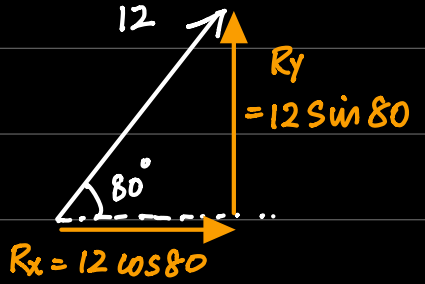
11



Two forces have magnitudes P N and Q N. The resultant of the two forces has magnitude 12 N and acts in a direction 40° clockwise from the force of magnitude P N and 80° anticlockwise from the force of magnitude Q N (see diagram). Find the value of Q .

[4]



H. A	V. A.	RESULTANT
$P \cos 60$ ← → Q $R_x = Q - P \cos 60$	$P \sin 60$ ↑ $R_y = P \sin 60$ ↑	

EQUATE BOTH R_x and R_y

$$Q - P \cos 60 = 12 \cos 80$$

$$Q - 13.645 \cos 60 = 12 \cos 80$$

$$Q = 8.909$$

$$P \sin 60 = 12 \sin 80$$

$$P = \frac{12 \sin 80}{\sin 60}$$

$$P = 13.646$$