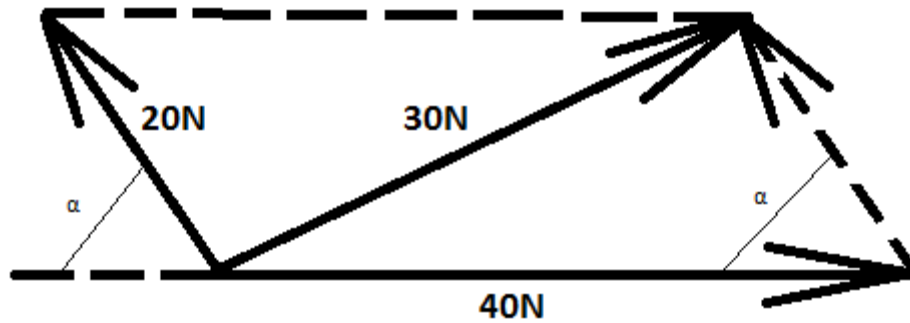


**Answer on Question #47981, Physics, Other**

*If the magnitude of two vectors are 40N and 20N. What should be their orientation to get 30N force as a resultant ?*



Using cosine theorem:

$$F_{Net}^2 = F_2^2 + F_1^2 - 2F_2F_1 \cos \alpha$$
$$\cos \alpha = \frac{F_2^2 + F_1^2 - F_{Net}^2}{2F_2F_1} = \frac{(40N)^2 + (20N)^2 - (30N)^2}{2 \cdot 40N \cdot 20N} = 0.69$$
$$\alpha = 47^\circ$$

Angle between vectors should be

$$< F_1F_2 = 180^\circ - 47^\circ = 133^\circ$$

**Answer: angle between vectors should be  $133^\circ$**