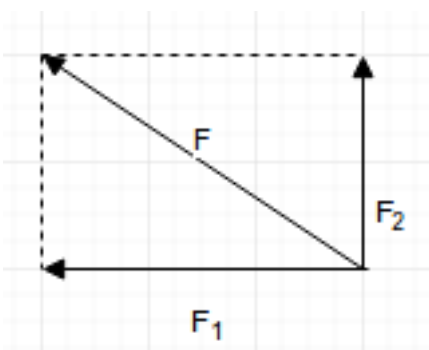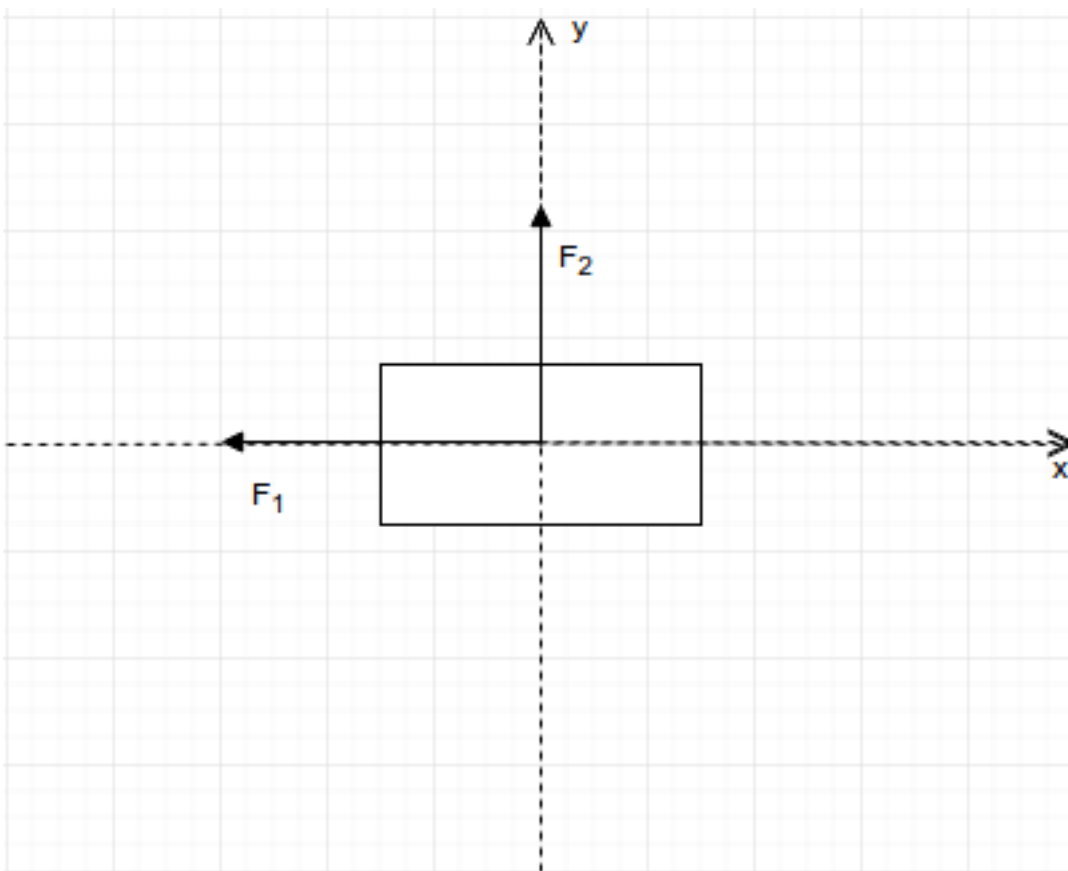# Question

A box is resting on the ground and you can assume its location is the origin of the system. A person applies a westward force of $31.7 Newtons(N)$ to the box while another applies a northward force of $43.5N$ to the box. Determine the total force applied to the box.

Solution

Using formula $F = \sqrt{F_x^2 + F_y^2}$, where F is total force, $F_x = F_1 + 0 \cdot F_2$ and $F_y = 0 \cdot F_1 + F_2$. Then:

$$F = \sqrt{F_1^2 + F_2^2} = \sqrt{31.7^2 + 43.5^2} = \sqrt{1004.89 + 1892.25} = \sqrt{2897.14} = 53.83N$$

Answer

$53.83N$