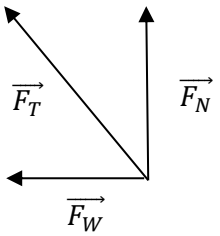
Answer on Question #61586 - Physics - Mechanics | Relativity

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 43.5 N to the box. Determine the total force applied to the box.

Answer:



The total force $\overrightarrow{F_T}$ is the sum of force applies a westward and of force applied a northward:

$$\overrightarrow{F_T} = \overrightarrow{F_W} + \overrightarrow{F_N}$$

Absolute value of $\overrightarrow{F_T}$ is:

$$F_T = \sqrt{{F_W}^2 + {F_N}^2}$$

$$F_T = \sqrt{31.7^2 + 43.5^2} \approx 53.83\ (N)$$

The total force applied to the box is 53.83 N.