Answer on Question #46339, Physics, Other

Question:

A person walks 33 m East and then walks 35 m at an angle 29∘ North of East.

What is the magnitude of the total displacement?

Answer in units of m

Answer:

East component of vector equals:

$$d_E = d \cos \theta$$

where $\theta = 29°$ – angle between d and east.

North component of vector equals:

$$d_N = d \sin \theta$$

Total displacement to east equals:

$$33 + 35 \cos 29° = 63.61 \, m$$

Displacement to north equals:

$$35 \sin 29° = 16.97 \, m$$

Resultant displacement equals:

$$D = \sqrt{63.61^2 + 16.97^2} = 65.8 \, m$$

Answer: $65.8 \, m$