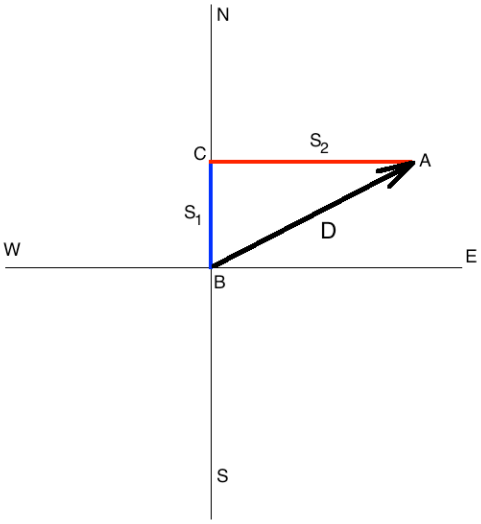
Answer on Question #43016 – Physics - Mechanics | Kinematics | Dynamics

A car moves 30m north and then 40m east then what is the magnitude of displacement of the car?

Solution:



$S_1 = 30\ m - distance\ that\ car\ has\ travelled\ north;$
$S_2 = 40\ m - distance\ that\ car\ has\ travelled\ east;$
From the rigth triangle ABC using the Pythagorean Theorem:

$$D^2 = S_1^2 + S_2^2$$

$$D = \sqrt{S_1^2 + S_2^2} = \sqrt{(30\ m)^2 + (40\ m)^2} = 50\ m$$

Answer: the magnitude of displacement of the car is equal to 50 m.