Vectors and Vector Addition

Finding a resultant

A dog runs 15 m N and then turns and runs 6 m E.
What is the dogs resultant?

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Resolving a vector

A ball rolls 50 cm at an angle of 36^{o} N or E. What are the “x” and “y” components?

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Adding Vectors Algebraically

You walk 45 m at 40° N of E and then 23 m at 22° S of E.

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Adding Vectors Algebraically

You walk 45 m at 40° N of E and then 23 m at 22° S of E.

Triangle 1
y_1 = Sin 40° * 45 = 28.93 m N
x_1 = Cos 40° * 45 = 34.47 m E

Triangle 2
y_2 = Sin 22° * 23 = 8.62 m S (-)
x_2 = Cos 22° * 23 = 21.33 m E

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Adding Vectors Algebraically

You walk 45 m at 40° N of E and then 23 m at 22° S of E.

New Triangle
y_R = 28.93 – 8.62 =20.31 m N
x_R = 34.47 + 21.33 = 55.8 m E

$$\sqrt{(20.31^2 + 55.8^2)} = 59.38\ m$$

$$tan^{-1} = \left(\frac{20.31}{55.8}\right) = 20°$$