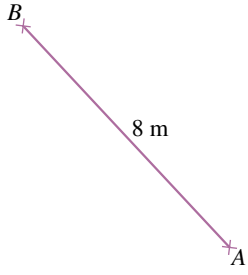
4.1 Introduction To Vectors

A. Scalars and Vectors

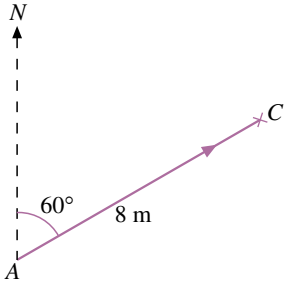
Consider these statements about an object moving on a horizontal plane:
(a) From a point A, the object moves 8 m.
(b) From a point A, the object moves 8 m on a bearing of 060°.

Can you locate the final position B of the object in each case?

In case **(a)**, the diagram shows a final position B of the object. But, is this the only possible one? If not, what other final positions are possible?



In case **(b)**, the diagram shows the exact final position C of the object after the translation.



In statement **(a)**, the distance, of 8 m in magnitude, is called a **scalar**.

In statement **(b)**, the displacement of 8 m (magnitude) on a bearing of 060° (direction) is called a **vector**.

A scalar is a quantity that has only magnitude.
A vector is a quantity that has both magnitude and direction.

Many physical quantities, such as *distance*, *time*, *mass* and *speed*, are examples of scalars. Can you name other examples of scalars?