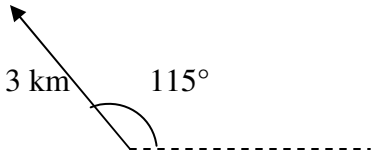
Bearings

When determining the direction of a vector, we will be working with angles. There are several systems we can use to identify the angle at which a vector is heading.

"Normal" (Cartesian)

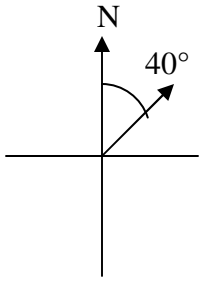
Without any reference directions, we simply refer to the angle with the "ground", as though the angle was in standard position.



"3 km at 115° above the horizontal"

Azimuth ("True") Bearing

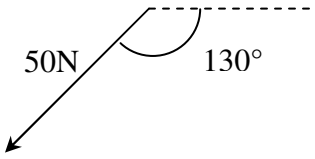
The angle is measured from North in a clockwise direction. True bearings are expressed with **3** digits. North has a bearing of 000°. The vector shown has a bearing of 040°.

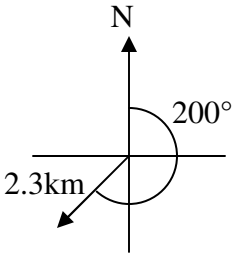


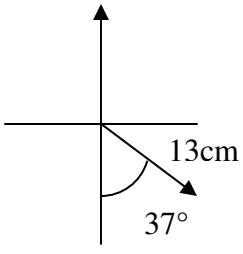
Quadrant Bearing

The angle is a measurement between 0° and 90°, emanating from the North-South line. (Much like a co-related angle.) It has 3 parts: direction from, angle, direction to. For example, the vector above has a bearing of N40°E.

Example 1: Describe the following vectors using an appropriate bearing.







50 N at 130° below the horizontal 2.3km bearing 200° 13cm bearing S37°E

Example 2: Draw the following vectors using an appropriate scale. (Diagrams will vary.)

a. $\vec{v}$ = 3N bearing 075°
b. $\vec{w}$ = 13km/h bearing N50°W

Example 3: Convert the following bearings:

a. True bearing of 350° to quadrant bearing (N10°W)
b. Quadrant bearing of S36°E to true bearing (144°)

Example 4: State the opposite of the following vectors

a. Displacement of 35m bearing 050° (35m bearing 230°)
b. Force of 15N bearing N17°E (15N bearing S17°W)

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