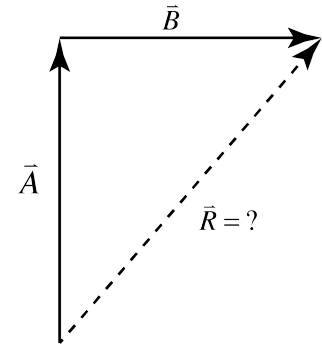


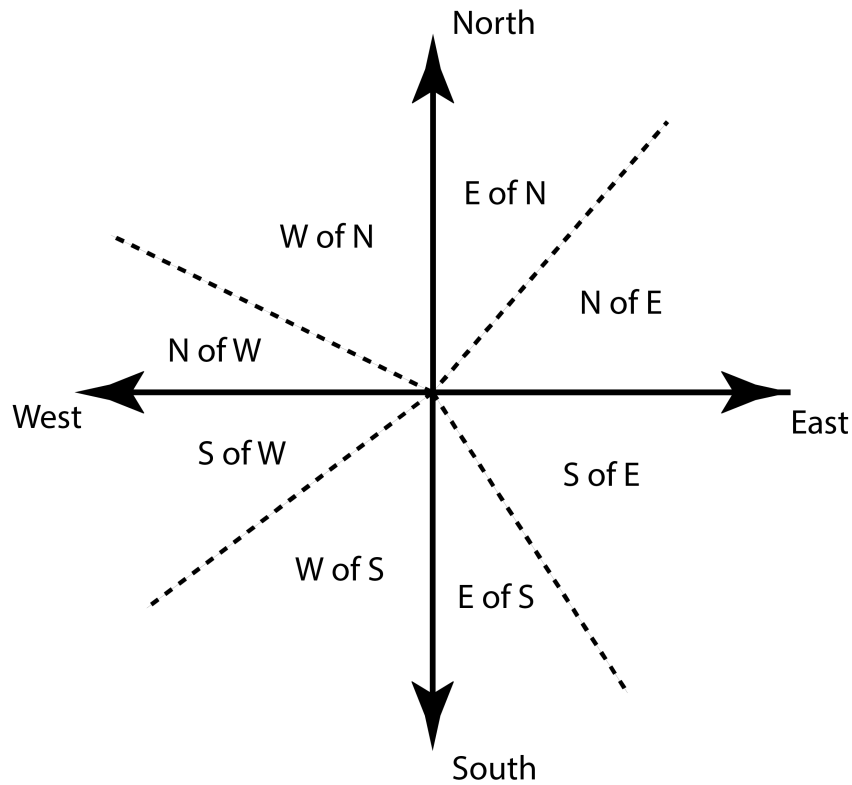


Flipping Physics Lecture Notes:
How to use Cardinal Directions with Vectors



In our previous lesson we added the two vectors \vec{A} and \vec{B} , using tip-to-tail vector addition to get a resultant vector $\vec{R} \approx 65 \frac{mm}{s} @ 41^\circ E \text{ of } N$. Now we are going to understand what 41° East of North means.

East of North is better described as East “from” North, because it means that the angle is measured Eastward from the Northward direction. This means that the eight ways to describe the direction of an angle are can be illustrated like this:



This means that our original vector $\vec{R} \approx 65 \frac{mm}{s} @ 41^\circ E \text{ of } N$ is equivalent to $\vec{R} \approx 65 \frac{mm}{s} @ 49^\circ N \text{ of } E$ because $41^\circ + 49^\circ = 90^\circ$.

Also the term Northeast (or NE) means exactly halfway between North and East or $45^\circ N \text{ of } E$ or $45^\circ E \text{ of } N$. This is also true of Southeast (SE), Southwest (SW) and Northwest (NW).