

Vectors are quantities that have magnitude or size and direction and are used in both Maths and Physics.

In Physics they can describe the acceleration of an object, or the forces acting upon it.

A two-dimensional vector is a vector with two components and can be written like this: three, one and negative two, four.

Vectors can be added to create a resultant vector. Add the top values together, and bottom values together to get the resultant vector.

So, three plus negative two is one, and one plus four is five.

The resultant vector is one five.

A more difficult question might look like this:

If P is four and negative six, and Q is negative five, negative one, what is the resultant vector half P plus Q?

First, halve each components in the first vector.

Half of four is two, half of negative six is negative three.

Then add the components: two plus negative five is negative three, negative three plus negative one is negative four.

The magnitude of a vector can be calculated using Pythagoras Theorem, using the square root of the total of the squares of the individual components.

For example, what is the magnitude if U is the vector six, negative eight?

Using Pythagoras, U will equal the square root of six squared plus negative eight squared which is the square root of 100, which is ten.

The same techniques can be used for three dimensional vectors.

If the vector is five, negative 15, 20, then the magnitude is the square root of five squared plus negative 15 squared plus 20 squared, which equals the square root of 650.

The magnitude of the vector equals 25 point five.