Imaginary number



There is no real number which squares to give -1. However, we can define an object which squares to -1. This is traditionally called *i* in mathematics and *j* in physics and engineering (to avoid confusion with *i* meaning an electrical current), so $i^2 = -1$. Thus we find that

- the square roots of -1 are *i* and -i
- the square roots of -4 are 2i and -2i

and so on.

We call real multiples of *i* (that is, *ai* for some real number *a*) *imaginary numbers*.

We can visualise imaginary numbers as lying along a number line like the ordinary real number line, but at right angles to it. These two number lines together form a plane called the complex plane.