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.