



60-Second Adventures in Thought

Achilles and the Tortoise

How could a humble tortoise beat the legendary Greek hero Achilles in a race? The Greek philosopher Zeno liked a challenge and came up with this paradox. First, the tortoise is given a slight head start. Anyone fancying a flutter would still rush to put their money on Achilles. But Zeno pointed out that, to overtake him, Achilles would first have to cover the distance to the point where the tortoise began. In that time the tortoise would have moved – so Achilles would have to cover that distance, giving the tortoise time to amble forwards a bit more. Logically this would carry on forever. However small the gap between them, the tortoise would still be able to move forwards while Achilles was catching up. Meaning that Achilles could never overtake.

Taken to an extreme, this bizarre paradox suggests that all movement is impossible. But it did lead to the realisation that something finite can be divided an infinite number of times. This concept of 'an Infinite Series' is used in finance, to work out mortgage payments...

Which is why they take an infinite amount of time to pay off!