



© 1997–2009, Millennium Mathematics Project, University of Cambridge.

Permission is granted to print and copy this page on paper for non-commercial use. For other uses, including electronic redistribution, please contact us.

---

January 1999

Regulars

## The Great Weights Puzzle



You are given 12 identical-looking weights, and an old-fashioned pair of balance scales. Either side of the scales is large enough to hold up to 12 weights.

Now, eleven of the weights are indeed identical, but one is different from the rest – either heavier or lighter, but you do not know which.

Your task is to use the balance scales to discover (a) which of the weights is the odd one out, and (b) whether it is heavier or lighter than the others.

Your challenge is to discover this information in the smallest possible number of weighings. What is the minimum number of weighings required? Can you explain why?

There is an [interactive applet](#) for this puzzle on our sister site [NRICH](#).

---



*Plus* is part of the family of activities in the Millennium Mathematics Project, which also includes the [NRICH](#) and [MOTIVATE](#) sites.