DR MATHS

WITH STEVE HUMBLE, HEAD OF MATHEMATICS, NEWCASTLE COLLEGE

Dear Dr Maths
I've often wondered why some numbers, like seven, are thought to be lucky and other numbers, like 13, are unlucky. Is there a reason for this?

Helen, Hexham

Superstitions have been used throughout time to ward off danger, pacify angry deities or summon good fortune. From these early superstitions grew many curious customs which still remain to the present day.
As you say, Helen, one of the most widespread superstitions is the belief that the number 13 is unlucky. Many hotels and office buildings do not have rooms or floors labelled 13. The most popular explanation for 13 being unlucky is that there were 12 apostles and Jesus at the Last Supper, the 13th guest being Judas Iscariot, who went on to betray Jesus. Yet this is not the only case of a 13th unlucky guest, as there is a Norse legend which tells of the mischievous Loki gatecrashing a feast with 12 gods. As a result of his actions at the feast, the world was plunged into darkness and mourning.
Seven, on the other hand, is thought to be lucky, because it is on the seventh day that we celebrate the Sabbath. There are also a number of other sevens in ancient history which could be attributed to this superstition. For example, seven appears in the Seven Wonders of the World, or the seven heavenly bodies named in ancient times as the Sun, Moon, Mercury, Venus, Mars, Jupiter and Saturn. Mathematically, seven and 13 are both prime numbers. Primes form the fundamental building blocks in our number system and have been thought to hold many important properties throughout the ages. A prime number is a number that cannot be divided exactly by any number other than itself and one. The first 13 are two, three, five, seven, 11, 13, 17, 19, 23, 29, 31, 37, 41. You can find out more about prime numbers at http://primes.utm.edu/
There are still a number of unsolved problems in prime number theory, and in some sense mathematicians know very little about primes. I can illustrate this with what at first seems a simple question: Can every positive, even whole number greater than two be written as the sum of two primes?
For example, here are the first seven even numbers written as two primes. It works for these, but does it always work? The answer is, nobody knows! Here is a puzzle for you to try. Which two primes add up to give 100?

2 + 2 = 4
3 + 3 = 6
3 + 5 = 8
5 + 5 = 10
5 + 7 = 12
7 + 7 = 14
5 + 11 = 16

The first correct entry drawn will win a copy of the book The Number Detective by Jon Millington, published by Tarquin. The book is also available from the Discovery Museum shop.
Well done to PS Driver from Swalwell, who correctly worked out that the sons in our last poser spent £14 each in the last puzzle.
Do you have a maths question or problem? Write to Dr Maths, Evening Chronicle, Groat Market, Newcastle NE1 1ED or email DRMaths@hotmail.co.uk