Boffins play the numbers game

SCIENTISTS have discovered a brand new prime number — but have found no real use for it.

The number is two multiplied by itself 756,839 times minus one and can only be divided by itself and one.

The new discoveries were found accidentally when scientists were making a routine test of Harwell's CRAY-2 Supercomputer.

Michael Schomberg, Harwell's computing manager said: "Although these large numbers offer little benefit to society today, they do have a curiosity value."

Pictured above are the Harwell team with their new number on reams

Prime mover comes to nothing

Tim Radford
Science Editor

COMPUTER scientists at Harwell have discovered the largest prime number so far. The discovery is of no use, but has delighted the scientists.

A prime number is one which can be divided only by itself and one. The latest prime number — known, technically, as Mersenne prime — has 227,832 digits — three times as many as the previous record-breaker.

The number, stunning in its inconsequence except for mathematicians, is two to the 756,839th power minus one. This means the figure two should be multiplied by itself 756,839 times, then subtract one.

Scientists at the Atomic Energy Authority technology laboratory in Oxfordshire discovered it while conducting a routine test on a Cray-2 supercomputer with four central processors.

Another reason for their delight was that they have also discovered a new perfect number.

A perfect number is equal to the sum of its factors (six equals the sum of 1,2 and 3 and is therefore a perfect number). There were previously only 31 known perfect numbers. The 32nd and latest has 455,663 digits, and if printed in the Guardian, would occupy 14 pages.

A spokeswoman for Harwell yesterday confirmed that the discovery had absolutely no significance or commercial use, except to delight mathematicians and challenge supercomputers.

"As computers become more and more sophisticated the chances of finding new prime numbers and similarly relatively useless things, as well as wonderful and useful things, increases," she said cautiously.

"The maths people are going to be happy. It really is good for them. The rest of us are really not going to be on such a high."

It is not likely to be the end of the story. Some 2,500 years ago the Greek geometer Euclid proved there is an infinite number of prime numbers. Watch this space.

day to the Irish Department of the Marine, one of the 175 passengers alleged there had been a significant list in the ship at 3am, over an

French authorities reportedly found several "minor deficiencies" on the ferry but none sufficient to detain it.

Scientists find useless figures

BRITISH scientists yesterday made a world-beating breakthrough in mathematics that is of absolutely no use to anyone.

By Susan Watts
Technology Correspondent

A team at the Atomic Energy Authority's Harwell Laboratories in Oxfordshire have found the largest known prime number and a new perfect number. Mathematicians everywhere are expected to spill their coffee at the news, but the discovery is of virtually no practical use, the scientists conceded.

A prime number can be divided exactly only by itself and 1 — for example, 3, 5 or 11. The new prime number has 227,832 digits, and is $2^{756839}-1$ — the result of multiplying 2 by itself 756,839 times, then subtracting one from the total.

The second discovery, is of a perfect number — only the 32nd found so far. A perfect number is equal to the sum of its factors. Six is the first perfect number, reached by adding one to two to three (1, 2 and 3 are factors of 6).

Michael Schomberg, Harwell's computing manager, said ancient mythology dictates that perfect numbers are so-called precisely because the first is six, and God created the Universe in six days.

The new perfect number is 455,663 digits long and is reached by multiplying 2 by itself 756,839 times, then subtracting one from the total, then multiplying the result once again by 2 multiplied by itself 756,839 times.

The team found the numbers — new world records to be entered in the Guinness Book of Records — using a Cray-2 supercomputer. This is usually employed for less frivolous activites such as sophisticated computer modelling of the King's Cross fire disaster.

During its rare idle moments, the team tests that the computer is functioning correctly by running a routine program, one of whose functions is to search for prime numbers.

Mr Schomberg said several hundred computers around the world are probably running this program, so the discovery was something of a fluke. Nevertheless he said the team was "very excited at having come out with what is a new world record".

He said that although prime numbers with a few hundred digits are used in cryptography and computer security codes this large a number is of no practical use.