In this section we introduce the notion of a
and its complexity. From these definitions there follo
the P and NP classes of problems and the notion of
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Dear Dr Sloane

October 21 1993.

An Unusual Sequence.
On Hiding a Ball.

I attach herewith copies of, articles about the two unsolved problems above, they come from a paperback. 'The Ultimate I.Q. Book' by Marcel Feenstra, Philip J. Carter, Christopher P. Harding,: It is a paperback, a WardLock Book (publisher) and is distributedin the U.S.A. BY Sterling Publishing Co. Inc. 387 Park Ave. S., New York, N.Y. 10016-8810. ISBN 0-7063-7148-8., and is about $6.

I would imagine that you have already seen the ball puzzle, but in case you have not, I send it. I also enclose the addresses of the various High-IQ societies, as you may know somebody in one or more of them.

The sequence problem in the 'Problem Drive' of the"Eureka" magazine was, [Feb 1993 #52]
'Fill in the gaps in the following sequences

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a) 10 20 129 440... new
b) 2 3 5 7 9 25 17 21 27...
c) 3 4 5 6 8 .....,12 15 16
d) 0 1 2 4 5 8 9

"A small bonus will be awarded for a correct non-obvious solution to the following:
e)4...,4...,4,4,4,4,4,4.

Mr L J Upton
1755 Lincolnshire Blvd
Mississauga Ontario
Canada L5E 2T3

Yours truly,

Solutions
a) 3200, 20460 (M in base n).
b) 31,33 (palindromic binary representations).
c)1917 (constructible polygons).
d)10,13 (sums of 2 squares).
e)1,12 (numbers of episodes in 'Mission to the Unknown' and 'The Daleks' Master Plan', the 2nd & 4th stories in Season 3 of 'Doctor Who'.

An Unsolved Number Series

What is the next number in the series 2, 4, 6, 9, 1[illegible]7, 20, 25, 28, 31, 34 ?

The series originally appeared in *Superforce*, a book by Paul Davies, a Professor of Applied Mathematics, published by Simon and Schuster. In 1985 a group of Spanish High-IQ society members became so intrigued why, after much collective mental exertion, they could not find a solution to this puzzle that the President of Spanish Mensa, Antonio Casao Ibáñez, wrote to Professor Davies for confirmation, or otherwise, of their conclusions.

Their first thought was of a possible error on the part of Professor Davies and they produced a similar series by adding to the series of natural progressive integers that of prime ones:

1	2	3	4	5	6	7	8	9	10	11	
1	2	[illegible]	5	7	11	13	17	19	21	23+	
2	4	6	9	12	17	20	25	28	31	34	

Their deliberate error was to include 21 in the series of prime numbers. Was it possible that

Professor Davies had suffered a similar lapse? However, there was one flaw in their reasoning: 1 is not a prime number (a prime number is an integer above 1 that cannot be factorized into other integers but is divisible only by itself and by 1, such as 2, 3, 5, 7 and 11), so surely this could not be the explanation.

In his reply to the Spanish Mensans Professor Davies deepened the mystery when he commented: 'When my attention was first drawn to the 21, I went back to my original hand script, because I had forgotten the solution to the puzzle. To my horror I could not find the key to the series, which I recalled scribbling in a margin [shades of Fermat's Last Theorem!]. I then embarked on a long and arduous study to try and solve my own puzzle. Eventually I came to your conclusion that the 21 must be an error, though it was too late to change the Spanish translation. However, I'm not *completely* sure it's an error, so if you can ever find a solution...'

So the mystery remains. Does the series contain a number of errors so that there is no possible solution, or is there, in fact, some forgotten logic behind the sequence waiting to be re-discovered?

Hiding a Ball

How many balls does it take to hide a ball?

All the balls are identical, hard, ideal balls, and the target ball is considered hidden if, and only if, any straight line from any point on the target ball must pass through, or at least touch, another ball before it can reach an observer outside the matrix.

Compiled in 1983 by an Australian Mensan, Michael F. Yonwin, this puzzle has still to be solved to the satisfaction of its author. Mr Yonwin comments: 'This is straight-out solid geometry. In two dimensions, six circles will hide a circle; but in three dimensions, it is fiendishly difficult, and requires at least 98 balls – and I was never satisfied that they quite did the job. I could not prove it to my own satisfaction. Incidentally, the problem can be extended to n dimensions, and presumably a function exists giving the solutions, but I didn't even attempt to find it!'