

Problem of the week

A Car driver crossed the red traffic light. The policeman on traffic duty missed the car number. Seeing some students waiting at the crossing, he inquired some students whether any of them had seen the number of the car?

Student replied : “ I noticed that the first two digits on the car plate were identical”.

Other one student said, “ The same was the case with the last two digits”.

Another student remarked: “ I have seen it was a square number”.

Can policeman find the number ?

Solu:

Let the first two digits are 'x' and last two digits as 'y'.

The number is $1000x+100x+10y+y$

$$= 11 (100x+y)$$

Since number is a square one , $(100x+y)$ should be divisible by 11.

For a number divisible by 11, the difference of digits at odd and even places should be divisible by 11.

But in $(100x+y)$ there is no digit at even place(ten's) and the thousandth place. Hence the sum of the digits at even places is 0. Sum of digits at 100^{th} and unit place $x+y$.

Hence difference = $x+y-0 = x+y$

Since x and y are digits, neither x nor y can be more than 9.

So $x+y=11$

Which gives the possibility

$$X=7, y=4$$

$$X=6, y=5$$

$$X=5, y=6$$

$$X=2, y=9$$

So possible car number is 7744 6655 5566 and 2299 But only square number is **7744**