

***** **Mathematical Weekly** *****
(week two)

A Magic Number --- 6174

- i) Pick 4 numbers from {1,2,3,4,5,6,7,8,9}, not all the same:
for example, pick 4617.

Form the maximum and minimum numbers using these 4 integers:
7641 and 1467.

Subtract the minimum from the maximum: $7641 - 1467$ then you get 6174.

Remember this number --- 6174

- ii) Pick another group of 4 numbers, not all the same:
for example, pick 1998.

Repeat the above arrangement and subtraction process:

- step 1) $9981 - 1899 = 8082$
2) $8820 - 0288 = 8532$
3) $8532 - 2358 = 6174$

Now, you get the same number --- 6174 --- again.

- iii) Let me assure you: after no more than 7 steps if you perform the above computations, you will always get the same number --- 6174.

If you don't believe me, try it!