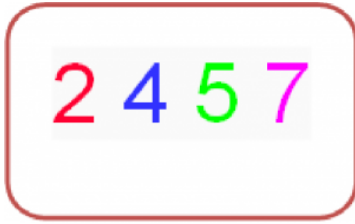


AND SO ON AND SO ON



If you change the order of these digits you get many different numbers, for example 2547, 2574, 2745, ... Write down all the four digit numbers made by using each of the digits 2, 4, 5, 7 once.

How many of these numbers have 2 in the thousands place? How many have 2 in the hundreds place? How many have 2 in the tens place? How many have 2 in the units place?

Now find what these 24 four digit numbers add up to.
How many methods can you find for solving this problem?

Help

You could first work on this simpler example:

How many numbers can you find using the digits 1 and 2? What do they add up to?

Answer 12 and 21 adding up to: $10 + 1 + 20 + 2 = 33$.

How many numbers can you find using the digits 1, 2 and 3? What do they add up to?

Answer 312, 132, 123, 321, 231, 213 putting 3 as the 1st digit in the numbers above, then the 2nd then the 3rd

$(300 + 10 + 2) + (100 + 30 + 2) + (100 + 20 + 3) + (300 + 20 + 1) + (200 + 30 + 1) + (200 + 10 + 3)$

$= 3(300 + 200 + 100) + 3(30 + 20 + 10) + 3(3 + 2 + 1)$

$= 1800 + 180 + 18$

$= 1998$

Now try for yourself: How many numbers can you find using the digits 1, 2, 3 and 4? What do they add up to?

Extension

How many 4 digit numbers can you find using the digits 1, 7, 2 and 6? What do they add up to?

Also see: <https://aiminghigh.aimssec.ac.za/grades-6-to-10-magic-13837/>

<https://aiminghigh.aimssec.ac.za/years-7-to-9-writ-large/>