

e-BULETIN JSKM

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Edisi April 2023



The Mysterious Beauty of 6174

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The mysterious number 6174 is known as the Kaprekar's constant. It was discovered by Indian mathematician D. R. Kaprekar in 1949. What makes this number so mysterious?

Do the following procedure with any four-digit number, making sure that at least two of the digits are different.

Step 1

Arrange the digits in descending and ascending order to create two new

Step 2

Next, subtract the smaller number from the larger number.

Step 3

Use the result and repeat step 1 and 2 until you get the number 6174.

For example, consider the four-digit number 3, 5, 7, 2

Step 1

The smallest number is 2357 and the largest number is 7532.

Step 2

$$7532 - 2357 = 5175$$

Step 3

Repeat the previous process

$$5, 1, 7, 5 : 7551 - 1557 = 5994$$

$$5, 9, 9, 4 : 9954 - 4599 = 5355$$

$$5, 3, 5, 5 : 5553 - 3555 = 1998$$

$$1, 9, 9, 8 : 9981 - 1899 = 8082$$

$$8, 0, 8, 2 : 8820 - 0288 = 8532$$

$$8, 5, 3, 2 : 8532 - 2358 = 6174$$

After 7 iterations, we have finally reached the number 6174. The above process will always reach the Kaprekar's constant, 6174, in at most 7 iterations. If we keep repeating the process after reaching 6174, it will keep producing the same number.

Share this mysterious beauty of 6174 with your kids and families.

Sources:

1. <https://www.theguardian.com/science/grrlscientist/2011/dec/12/1>
2. <https://www.scoopwhoop.com/culture/why-is-number-6174-considered-a-magic-number/>