STD – 10 MATHS

CHAPTER - 1

REAL NUMBER

EXERCISE-1.2 (Q.5,6,7)

5. Check whether 6^n can end with the digit 0 for any natural number n.

- If the number 6^n ends with the digit zero (0), then it should be divisible by 5, as we know any number with unit place as 0 or 5 is divisible by 5.

  Prime factorization of $6^n = (2 \times 3)^n$

  Therefore, the prime factorization of 6^n doesn't contain prime number 5.

Hence, it is clear that for any natural number 6^n is not divisible by 5 and thus it proves that 6^n cannot end with the digit 0 for any natural number n.

6. Explain why $7 \times 11 \times 13 + 13$ and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite numbers.

- By the definition of composite number, we know, if a number is composite, then it means it has factors other than 1 and itself.

Therefore, for the given expression;

$7 \times 11 \times 13 + 13$

Taking 13 as common factor, we get,

$= 13 (7 \times 11 \times 1 + 1)$

$= 13 (77 + 1)$

$= 13 \times 78$

$= 13 \times 3 \times 2 \times 13$

Hence, $7 \times 11 \times 13 + 13$ is a composite number.

Now let's take the other number,

$7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$

Taking 5 as a common factor, we get,

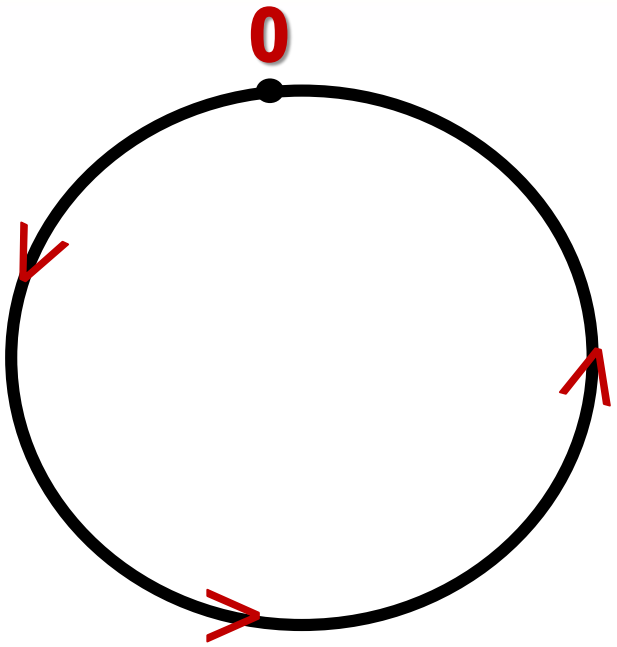
$= 5 (7 \times 6 \times 4 \times 3 \times 2 \times 1 + 1)$

$= 5 (1008 + 1)$

$= 5 \times 1009$

Hence, $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ is a composite number.

7. There is a circular path around a sports field. Sonia takes 18 minutes to drive one round of the field, while Ravi takes 12 minutes for the same. Suppose they both start at the same point and at the same time, and go in the same direction. After how many minutes will they meet again at the starting point?



Sonia → 18 minutes → $18 = 1^{st}$

→ $36 = 2^{nd}$

Ravi → 12 minutes → $12 = 1^{st}$

→ $24 = 2^{nd}$

→ $36 = 3^{rd}$

Since, Both Sonia and Ravi move in the same direction and at the same time, the method to find the time when they will be meeting again at the starting point is LCM of 18 and 12.

2	18	12
3	9	6
3	3	2
2	1	2
	1	1

Therefore, LCM(18,12) = $2 \times 3 \times 3 \times 2 \times 1$

$= 36$

Hence, Sonia and Ravi will meet again at the starting point after 36 minutes.

Thanks

For watching