IIIT Delhi - RAM Maths Circle
Session 2

(Organized by the Department of Mathematics, IIIT Delhi)

IIIT-Delhi September 21st, 2025

---

1. Find the values of x and y to satisfy $423x + 198y = 9$, where x and y are integers.
2. Can you find two integers x and y such that $x+y = 100$ and $gcd(x, y) = 5$ (gcd implies the greatest common divisor) .
3. Find all triples of positive integers a, b, c satisfying $gcd(a, b, c) = 10$ and $lcm(a, b, c) = 100$ simultaneously.
4. Given that $gcd(a, 4) = 2$ and $gcd(b, 4) = 2$, prove that $gcd(a + b, 4) = 4$.
5. How many zeros are at the end of 1000!? The notation $n! = 1.2.3.4. \cdots .1000$.
6. Can you find x such that x leaves remainder 2 when divided by 3, leaves remainder 3 when divided by 5 and 2 when divided by 7.
7. Verify numerically, for the first five positive integers, that the difference between two consecutive cubes is never divisible by 5.
8. Divide 100 into two summand (parts) such that such that one is divisible by 7 and the other by 11.

End of problem sheet