Playing with Numbers

1. A number is said to be in a generalized form if it is expressed as the sum of the products of its digits with their respective place values.

2. The general form of a 2-digit number ab can be written as:
   $ab = a \times 10 + b \times 1$,
   where a is any whole number from 1 to 9 and b is any whole number from 0 to 9.

3. The general form of a 3-digit number abc can be written as:
   $abc = a \times 100 + b \times 10 + c \times 1$,
   where a is any whole number from 1 to 9, b and c are any whole number from 0 to 9.

4. The sum of a 2-digit number and the number obtained by reversing the digits is always divisible by 11.

5. The difference of a 2-digit number and the number obtained by reversing its digits is always divisible by 9.

6. The difference of a 3-digit number and the number obtained by reversing its digits is always divisible by 99.

7. The general form of numbers is helpful in solving puzzles or number games.

8. Test for divisibility by 2: A number is divisible by 2, if its unit place digit is 0, 2, 4, 6 or 8.

9. Test for divisibility by 3: A number is divisible by 3, if the sum of its digits is divisible by 3.

10. Test for divisibility by 4: A number is divisible by 4, if the number formed by its digits in tens and units place is divisible by 4.

11. Test for divisibility by 5: A number is divisible by 5, if its unit's digit is 0 or 5.

12. Test for divisibility by 6: A number is divisible by 6, if it is divisible by both 2 and 3.

13. Test for divisibility by 8: A number is divisible by 8, if the number formed by its digits in hundreds, tens and unit's places is divisible by 8.

14. Test for divisibility by 9: A number is divisible by 9, if the sum of its digits is divisible by 9.

15. Test for divisibility by 10: A number is divisible by 10, if its unit's digit is zero.

16. Test for divisibility by 11: A number is divisible by 11, if the difference of the sum of its digits in odd places and sum of its digits in even places (starting from unit's place) is either 0 or a multiple of 11.

17. If two numbers are divisible by a number then their sum and difference are also divisible by that number.

18. If a number is divisible by two co-prime numbers, then it is divisible by their product also.