# 100 Math Problems for Coding Practice

## Loop-Based Problems (1-30)

1. Print numbers from 1 to 100.
2. Print all even numbers from 1 to 100.
3. Print all odd numbers from 1 to 100.
4. Print the first 20 multiples of 5.
5. Print the sum of numbers from 1 to 100.
6. Print the factorial of a number.
7. Count how many numbers from 1 to 100 are divisible by 3.
8. Print all prime numbers between 1 and 100.
9. Find the nth Fibonacci number.
10. Generate the first 20 Fibonacci numbers.
11. Count the digits in a number.
12. Reverse a number using a loop.
13. Print multiplication table of a number (1-10).
14. Find the sum of digits of a number.
15. Print all perfect squares up to 100.
16. Check if a number is a palindrome.
17. Count vowels in a given string.
18. Calculate power without using built-in functions.
19. Print the pattern:

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20. Print the pattern:

    1

    12

    123

    1234

21. Print all three-digit numbers that are Armstrong numbers.
22. Find the LCM of two numbers.

23. Find the GCD of two numbers using loop.
24. Count all even digits in a number.
25. Convert binary to decimal manually.
26. Convert decimal to binary manually.
27. Find the sum of the first n odd numbers.
28. Calculate the sum of the first n even numbers.
29. Sum of squares of the first n natural numbers.
30. Sum of cubes of the first n natural numbers.

## List-Based Problems (31-65)

1. Find the largest number in a list.
2. Find the smallest number in a list.
3. Sort a list without using built-in functions.
4. Count even and odd numbers in a list.
5. Remove duplicates from a list.
6. Count the number of times a number appears in a list.
7. Reverse a list using a loop.
8. Merge two lists and sort them.
9. Add all elements in a list.
10. Multiply all elements in a list.
11. Find the second largest number in a list.
12. Create a list of squares from 1 to 100.
13. Count how many numbers are divisible by 5 in a list.
14. Filter out numbers greater than 50 in a list.
15. Find all palindromic numbers in a list.
16. Separate a list into even and odd lists.
17. Find numbers in a list that are prime.
18. Replace negative numbers in a list with 0.
19. Sum only the positive numbers in a list.
20. Count how many numbers are perfect squares.
21. Rotate a list to the right by k steps.
22. Check if two lists are equal.

23. Find common elements between two lists.
24. Find elements that are in list A but not in list B.
25. Interleave two lists (e.g., [1,2] and [3,4] - [1,3,2,4]).
26. Find the difference between max and min in a list.
27. Check if a list is sorted.
28. Remove all zeroes from a list.
29. Flatten a 2D list into a 1D list.
30. Find the average of a list.
31. Generate a list of the first n prime numbers.
32. Find the median of a list.
33. Find mode (most frequent element) of a list.
34. Count how many numbers are Armstrong numbers in a list.
35. Replace all even numbers in a list with their square.

### Condition-Based Problems (66-100)

1. Check if a number is even or odd.
2. Check if a number is prime.
3. Check if a year is a leap year.
4. Determine grade based on marks (A, B, C...).
5. Find the largest of three numbers.
6. Check if a number is positive, negative, or zero.
7. Check if a character is a vowel or consonant.
8. Check if a string is a palindrome.
9. Check if a number is a perfect number.
10. Check if a string contains only digits.
11. Find the quadrant of a coordinate (x, y).
12. Check if a number is divisible by 3 and 5.
13. Determine if a triangle is valid with 3 angles.
14. Determine the type of triangle based on sides.
15. Convert Celsius to Fahrenheit and vice versa.
16. Check if a number is an Armstrong number.
17. Check if a number is a Harshad number.

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18. Check if a number is an Automorphic number.
19. Check if a number is a Spy number.
20. Validate a simple password (length, character type).
21. Check if a person is eligible to vote.
22. Categorize age (Child, Teen, Adult, Senior).
23. Check if a character is uppercase or lowercase.
24. Compare two strings lexicographically.
25. Check if a year is a century year.
26. Check if two numbers have the same digits.
27. Check if a list is a palindrome.
28. Implement a basic calculator (add, sub, mul, div).
29. Classify number as small, medium, or large.
30. Check if a string has alternating vowels and consonants.
31. Check if a number is lucky (sum of first half = second half).
32. Determine the day type (weekend or weekday).
33. Validate if an email format is correct (basic check).
34. Check if a list has duplicates.
35. Implement FizzBuzz: print 1-100, print "Fizz" for multiples of 3, "Buzz" for 5, and "FizzBuzz" for both.