Operators & Control Statements

1. Check if a number is even or odd?
2. Check if a number is prime or not?
3. whether x is positive x
4. whether x is a multiple of y
5. whether x is between -2 and 13
6. whether the difference between x and y is less than 5
7. whether x is not between 5 and 27
8. whether x has more than 4 digits
9. whether x has exactly 6 digits
10. Find the factorial of a number?
11. Find whether the factorial of a number is prime or not?
12. Find the greatest of 2 number?
13. Find the greatest and smallest of 3 number?
14. Write a Java program that takes two positive integers, then displays whether the first is a multiple of the second or not.
15. Find whether the number is Armstrong number or not? (149 1^3 + 4^3 + 9^3 should be 149). An Armstrong number of 3 digits is a number for which sum of cube of its digits is equal to number e.g., 371 is an Armstrong number because of 3*3*3 + 7*7*7 + 1*1*1 = 371).
16. Find fibonacci series upto n digit ? if n=5 O/p: 0 1 1 2 3
17. Swap 2 numbers value?
18. Add 2 numbers without using + operator
19. Multiply two numbers without using * operator
20. Divide a number without using / operator
21. Find the sum of digit 123 = 1+2+3=6

22. Find whether the number is palindrome or not Example, 141

23. Convert a number to binary,Hexadecimal and vice versa

24. Print the table of a number? eg 3 means 3*1=3 3*2=6…. upto 10

25. Find LCM of 3 numbers

26. Find HCF of 3 numbers

27. Find the sum of 1+2+3+….N

28. Find the sum of 1^2 + 2^2 + 3^2 +….. N^2

29. Find the sum of 1+2^2+3^3 +4^4+…..N^N

30. Write a program that takes a floating point number and then displays the right-most of the integral part of the number.

31. Given 3 int values, a b c, return their sum. However, if one of the values is the same as another of the values, it does not count towards the sum.
    1, 2, 3 → 6
    3, 2, 3 → 2
    3, 3, 3 → 0

32. Given 3 int values, a b c, return their sum. However, if one of the values is 13 then it does not count towards the sum and values to its right do not count. So for example, if b is 13, then both b and c do not count.
    1, 2, 3 → 6
    1, 2, 13 → 3
    1, 13, 3 → 1

33. Given three ints, a b c, return true if one of b or c is "close" (differing from a by at most 1), while the other is "far", differing from both other values by 2 or more.
    1, 2, 10 → true
    1, 2, 3 → false
    4, 1, 3 → true

34. Given 2 int values greater than 0, return whichever value is nearest to 21 without going over. Return 0 if they both go over.
    19, 21 → 21
    21, 19 → 21
    19, 22 → 19

35. Given three ints, a b c, one of them is small, one is medium and one is large. Return true if the three values are evenly spaced, so the difference between small and medium is the same as the difference between medium and large.

2, 4, 6 → true
4, 6, 2 → true
4, 6, 3 → false

36. We want make a package of goal kilos of chocolate. We have small bars (1 kilo each) and big bars (5 kilos each). Return the number of small bars to use, assuming we always use big bars before small bars. Return -1 if it can't be done.
    4, 1, 9 → 4
    4, 1, 10 → -1
    4, 1, 7 → 2

37. Given a positive int n, return true if it contains a 1 digit. Note: use % to get the rightmost digit, and / to discard the rightmost digit.
    10 → true
    22 → false
    220 → false

38. We'll say that a positive int divides itself if every digit in the number divides into the number evenly. So for example 128 divides itself since 1, 2, and 8 all divide into 128 evenly. We'll say that 0 does not divide into anything evenly, so no number with a 0 digit divides itself. Note: use % to get the rightmost digit, and / to discard the rightmost digit.
    128 → true
    12 → true
    120 → false

39. If we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23.
    Find the sum of all the multiples of 3 or 5 below 1000.

40. Each new term in the Fibonacci sequence is generated by adding the previous two terms. By starting with 1 and 2, the first 10 terms will be:
    1, 2, 3, 5, 8, 13, 21, 34, 55, 89, ...
    By considering the terms in the Fibonacci sequence whose values do not exceed four million, find the sum of the even-valued terms.

41. A palindromic number reads the same both ways. The largest palindrome made from the product of two 2-digit numbers is 9009 = 91 × 99.
    Find the largest palindrome made from the product of two 3-digit numbers.

42. 2520 is the smallest number that can be divided by each of the numbers from 1 to 10 without any remainder.
    What is the smallest positive number that is evenly divisible by all of the numbers from 1 to 20?

43. The sum of the squares of the first ten natural numbers is,
    12 + 22 + ... + 102 = 385
    The square of the sum of the first ten natural numbers is,
    (1 + 2 + ... + 10)2 = 552 = 3025
    Hence the difference between the sum of the squares of the first ten natural numbers and the square of the sum is 3025 - 385 = 2640.

Find the difference between the sum of the squares of the first one hundred natural numbers and the square of the sum.

44. B
A Pythagorean triplet is a set of three natural numbers, a < b < c, for which,
a2 + b2 = c2
For example, 32 + 42 = 9 + 16 = 25 = 52.
There exists exactly one Pythagorean triplet for which a + b + c = 1000.
Find the product abc.

45. $2^{15} = 32768$ and the sum of its digits is 3 + 2 + 7 + 6 + 8 = 26.
What is the sum of the digits of the number 2^{1000}?

46. A perfect number is a number for which the sum of its proper divisors is exactly equal to the number. For example, the sum of the proper divisors of 28 would be 1 + 2 + 4 + 7 + 14 = 28, which means that 28 is a perfect number.
A number *n* is called deficient if the sum of its proper divisors is less than *n* and it is called abundant if this sum exceeds *n*.
As 12 is the smallest abundant number, 1 + 2 + 3 + 4 + 6 = 16, the smallest number that can be written as the sum of two abundant numbers is 24. By mathematical analysis, it can be shown that all integers greater than 28123 can be written as the sum of two abundant numbers. However, this upper limit cannot be reduced any further by analysis even though it is known that the greatest number that cannot be expressed as the sum of two abundant numbers is less than this limit.
Find the sum of all the positive integers which cannot be written as the sum of two abundant numbers.

47. The first two consecutive numbers to have two distinct prime factors are:
14 = 2 × 7
15 = 3 × 5
The first three consecutive numbers to have three distinct prime factors are:
644 = 2^2 × 7 × 23
645 = 3 × 5 × 43
646 = 2 × 17 × 19.
Find the first four consecutive integers to have four distinct prime factors. What is the first of these numbers?

48. Write a program in java to change number into words
for example 2341 into Two Thousand Three Hundred Fourthy One

49. Write a program in java to change number into Roman Numbers

50. The number, 197, is called a circular prime because all rotations of the digits: 197, 971, and 719, are themselves prime.
There are thirteen such primes below 100: 2, 3, 5, 7, 11, 13, 17, 31, 37, 71, 73, 79, and 97.
How many circular primes are there below one million?