Use cin to take user input when necessary.

1. Write a program that checks if a given number is positive, negative, or zero using if-else statements. `Cout` whether the number is positive, negative, or zero

2. Write a program that determines if a given number is even or odd using if-else statements. `Cout` whether the number is even or odd. (Hint: Use Modulo)

3. Write a program that calculates the sum of all even numbers between 1 and a given number using a while loop. `Cout` the final sum.

4. Write a program that calculates the factorial of a given number using a while loop. `Cout` the final sum of the factorial.

5. Write a program that finds the largest of three numbers using if-else statements. `Cout` the largest number.

6. Write a program that checks if a given year (above 400) is a leap year using if-else statements. `Cout` whether it is a leap year or not.

7. Write a program that prints all the prime numbers between 1 and a given number using a while loop.

8. Write a program that prints the Fibonacci series up to a given number using a while loop.

9. Write a program that checks if a given number is a perfect square using if-else statements. `Cout` whether it is a perfect square or not.

10. Write a program that calculates the sum of all numbers divisible by 3 and 5 between 1 and a given number using a while loop. `Cout` the sum of the numbers.

11. Write a program that determines the grade of a student based on their score using if-else statements. For example, if grade is above a 90 give an A, greater than 80 give B so on and so forth. `Cout` the grade.

12. Write a program that calculates the sum of the digits of a given number using a while loop. `Cout` the sum.

13. Write a program that checks if a given number is a prime number using if-else statements. `Cout` is the prime number.

14. Write a program that checks if a given number is a palindrome using a while loop and if-else statements. `Cout` whether it is a palindrome or not.

15. Write a program that calculates the sum of all prime numbers between 1 and a given number using a while loop. `Cout` the sum.

16. Write a program that prints the right triangle shape out of asterisks. Right triangle must have a base width of 5 stars.

Ex.
```
*
**
***
****
*****
```

17. Write a program to calculate the total expenses. Quantity and price per item are input by the user and a discount of 10% is offered if the expense is more than 5000. `Cout` the final total.

18. Write a program to check whether a triangle is valid or not, when the three angles of the triangle are entered by the user. A triangle is valid if the sum of all the three angles is equal to 180 degrees. `Cout` whether the triangle is valid or not.

19. Write a program to find the roots of and quadratic equation of type ax2+bx+c where a is not equal to zero. You will need to distinguish whether the roots are real & equal, real & distinct, or the roots are imaginary. `Cout` the roots and which classification they fall into.

20. Write a program to reverse any given integer number. `Cout` the reversed number.

21. Write a program to print out all Armstrong numbers between 1 and 500. If the sum of cubes of each digit of the number is equal to the number itself, then the number is called an Armstrong number. For example, 153 = (1 * 1 * 1) + (5 * 5 * 5) + (3 * 3 * 3)

22. Write a program to calculate GCF of Two given numbers. `Cout` the GCF. (Hint: Use the Euclidean Algorithm)

23. Print out the following patterns using a while loop.

a.
```
    1
   222
  33333
 4444444
555555555
```

b.

1
212
32123
4321234
543212345