nth power of 2

i/p :- n = 4

ans = 2^n

= 2^4 = 16

n=4

ans = 2 x 2 x 2 x 2

n time

Power Inbuilt fn

2^5

Math.pow(a, b);

→ a^b

↳ it always return double answer

code

```
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();

    int ans = 1;
    for (int i = 0; i < n; i++) {
        ans *= 2;
    }
    System.out.println(ans);
}
```

dry run

n = 5 = 2^5 = 32

ans = 1

i = 0 < 5 , ans = 2

i = 1 < 5 , ans = 4

i = 2 < 5 , ans = 8

i = 3 < 5 , ans = 16

i = 4 < 5 , ans = 32

i = 5 < 5 false

Print powers of 2 less than n

i/p , n = 40

```
int ans = 1;
for( int i=1 ; i<n ; i = i*2){
    Syso( i );
}
```

(40)

1, 2, 4, 8, 16, 32.

```
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();

    for (int i = 1; i < n; i = i * 2) {
        System.out.print(i + " ");
    }

}
```

Multiples of 3, 5 and Both 3 and 5

i/p , n = 100

```
for ( int i=1 ;  i<=n ; i++) {
    if ( i % 3 == 0) {
        Syso(i); ✓
    } else if ( i % 5 == 0) {
        Syso( i); ✓
    } else if ( i %3 == 0 && i %5 == 0) {
        Syso(i); ✓
    }
}
```

Code

```java
public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    int n = scn.nextInt();

    for (int i = 1; i <= n; i++) {
        if ( i % 3 == 0 && i % 5 == 0 ) {
            System.out.print(i + " ");
        } else if ( i % 3 == 0 ) {
            System.out.print(i + " ");
        } else if ( i % 5 == 0 ) {
            System.out.print(i + " ");
        }
    }
}
```

While loop

(if a code can be written using for loop then it could also be written using while loop & vice-versa)

Syntex

initialisation

```
while (condition){
    // statement
    upgradata
}
```

⇒ Do while

Syntex

initialisation

```
do {
    //statement

    upgradation

} while ( condition )
```

Note:-

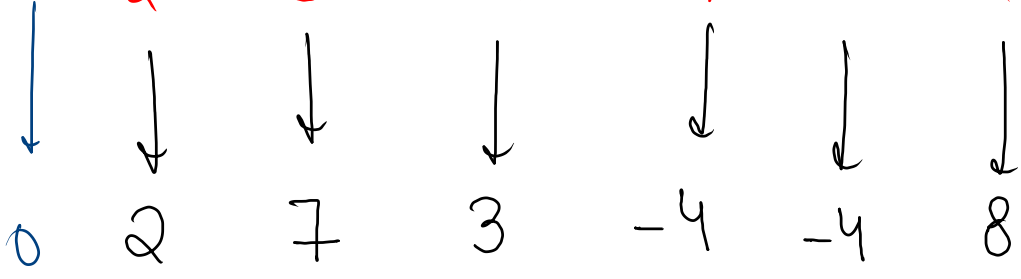
do while loop always run atleast one time

Running Sum for loop

Series :- 1 2 3 4 5 6

Running sum series 1 3 6 10 15 21

Series :- 2 5 -4 -7 0 12



Running Sum for loop