1.Write a javascript function to calculate the sum of two numbers?

Ans:
```
function sum(a, b) {
  return a + b;
}
const num1 = 5;
const num2 = 7;
const result = sum(num1, num2);
console.log(`The sum of ${num1} and ${num2} is ${result}`);
```

2. Write a JavaScript function multplication table.

Ans:
```
function multiplicationTable(number, range) {
  for (let i = 1; i <= range; i++) {
    console.log(`${number} * ${i} = ${number * i}`);
  }
}
const num = 5;
const range = 10;
multiplicationTable(num, range);
```

3. Write a JavaScript program to find the maximum number in an array.

Ans:
```
function findMax(arr) {
  if (arr.length === 0) {
    throw new Error("Array is empty");
  }

  let max = arr[0];
  for (let i = 1; i < arr.length; i++) {
    if (arr[i] > max) {
      max = arr[i];
    }
  }
  return max;
}
```

```
const numbers = [3, 5, 7, 2, 8, 1, 9];
const maxNumber = findMax(numbers);
console.log(`The maximum number in the array is ${maxNumber}`);
```

4. Write a JavaScript function to check if a given string is a palindrome (reads the same forwards and backwards).

Ans:
```
function isPalindrome(str) {
    const cleanedStr = str.replace(/[^a-zA-Z0-9]/g, '').toLowerCase();
    const reversedStr = cleanedStr.split('').reverse().join('');
    return cleanedStr === reversedStr;
}
const word1 = "A man, a plan, a canal, Panama";
const word2 = "hello";
console.log(`"${word1}" is a palindrome: ${isPalindrome(word1)}`);
console.log(`"${word2}" is a palindrome: ${isPalindrome(word2)}`);
```

5. Write a Javascript program to reverse a given string.

Ans:
```
function reverseString(str) {
    return str.split('').reverse().join('');
}
const originalString = "hello";
const reversedString = reverseString(originalString);
console.log(`The reverse of "${originalString}" is
"${reversedString}"`);
```

6. Write a JavaScript function that takes an array of numbers and returns a new array with only the even numbers.

Ans:
```
function filterEvenNumbers(arr) {
    return arr.filter(number => number % 2 === 0);
}
```

```
const numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10];

const evenNumbers = filterEvenNumbers(numbers);

console.log(`The even numbers are: ${evenNumbers}`);
```

7. Write a JavaScript program to calculate the factorial of a given number.

Ans:

```
function factorial(n) {
    if (n < 0) {
        throw new Error("Factorial is not defined for negative numbers");
    }
    if (n === 0 || n === 1) {
        return 1;
    }
    return n * factorial(n - 1);
}

const number = 5;

const result = factorial(number);

console.log(`The factorial of ${number} is ${result}`);
```

8. Write a JavaScript function to check if a given number is prime.

Ans:

```
function isPrime(num) {
    if (num <= 1) {
        return false;
    }
    if (num <= 3) {
        return true;
    }
    if (num % 2 === 0 || num % 3 === 0) {
```

```
        return false;
    }
    for (let i = 5; i * i <= num; i += 6) {
        if (num % i === 0 || num % (i + 2) === 0) {
            return false;
        }
    }
    return true;
}
const number = 29;
const result = isPrime(number);
console.log(`${number} is a prime number: ${result}`);
```

9. Write a JS function that returns the Fibonacci sequence up to a given number of terms.

Ans:
```
function fibonacciSequence(numTerms) {
    if (numTerms <= 0) {
        return [];
    }
    if (numTerms === 1) {
        return [0];
    }

    let sequence = [0, 1];
    for (let i = 2; i < numTerms; i++) {
        const nextFib = sequence[i - 1] + sequence[i - 2];
        sequence.push(nextFib);
```

```
    }

      return sequence;

}

const numTerms = 10;

const fibonacci = fibonacciSequence(numTerms);

console.log(`The Fibonacci sequence up to ${numTerms} terms: ${fibonacci}`);
```

10. Write a JavaScript function to convert "AAA BBB is CCC DDD" to "BBB AAA is DDD CCC"

Ans:
```
function convertString(str) {

    const words = str.split(' ');

  const rearranged = [words[1], words[0], words[3], words[2]].join(' ');



    return rearranged;

}

const inputString = "AAA BBB is CCC DDD";

const convertedString = convertString(inputString);

console.log(`Converted string: ${convertedString}`);
```

11. Write a JavaScript program to print below
#$$$$
##$$$
###$$
####$

Ans:
```
function printPattern(rows) {

    for (let i = 1; i <= rows; i++) {

        let line = '';

        for (let j = 1; j <= i; j++) {

            line += (j === i ? '$' : '#');
```

```
        }

            for (let k = i + 1; k <= rows; k++) {

           line += '$';

        }

        console.log(line);

    }

}

const numRows = 4;

printPattern(numRows);
```

11. Write a JavaScript program to print below 1
1 2 3
1 2 3 4 5
1 2 3 4 5 6 7
1 2 3 4 5 6 7 8 9
Ans:

```
function printPattern(rows) {
 for (let i = 1; i <= rows; i++) {
 let rowOutput = '';
 for (let j = 1; j <= 2 * i - 1; j++) {  rowOutput +=
j + ' ';
 }
 console.log(rowOutput.trim());  }
}

printPattern(5);
```