1-Explain how var works in JavaScript. What is variable hoisting? Give a code example.

it a way to declare variables which is func scoped,

hoising is moving variables declaration to the top of the scope before execution

console.log(x) //prints undefined.

var x = 5.

console.log(x) // prints 5 .

2- What is the scope of a variable declared with var inside a function? What about inside a block (e.g., an if statement)?

function scoped.

its not block scoped so it would be global.

3- List all JavaScript primitive types in ES5. Give an example of each.

string , var s ='hazem';

Number, var n = 5;

boolen , var b = true;

undefined , var u;

null , var n = null;

4-What is the difference between a primitive type and an object type? Give an example where this difference is important.

primitive: stored by value , doesnt have methods.

object: stored by reference , can have methods.

when passing value:

```
function changeX(x) {
  x = 100;
}
let num = 42;
changeX(num);
```

console.log(num); // print 42

if it was an array it would change.

5-Create a number, string, and boolean using both literal and constructor syntax. Show the difference in their types using typeof.

```
> var n = 5
  var n2 = new Number(5)
  console.log(typeof(n))
  console.log(typeof(n2))
number
object
```

```
> var n = "hh"
  var n2 = new String("hhh")
  console.log(typeof(n))
  console.log(typeof(n2))
string
object
```

```
> var n = true
  var n2 = new Boolean(false)
  console.log(typeof(n))
  console.log(typeof(n2))
boolean
object
```

6-Why is it generally recommended to use literals instead of constructors for primitive types?

its easier to type and read and provides cleaner code, constructors provide slight better proforance which can be neglected.

7-Given the following code, what will be the output? Explain why.

var x = 123.4567;

console.log(x.toFixed(2));

console.log(x.toPrecision(4));

ouput:

123.46 , returns two digits after the mark.

123.5 ,returns total 4 digits number .

8-What is NaN? How can you check if a value is NaN? Give an example.

Nan stands for 'not a number' , its a constant that represents numerical unrepresentable values .

isNaN() function.

9-What is the difference between parseInt, parseFloat, and Number? Give an example for each.

parseInt : a func to parse into an integer number

parsefloat: a func to parse into a float number

Number: func to parse into a float number

```
> var s = "555.555"
  s1 = parseInt(s)
  console.log(s1)
  s2 = parseFloat(s)
  console.log(s2)
  s3 = Number(s)
  console.log(s3)
555
555.555
555.555
```

10-What is the difference between implicit and explicit type casting? Give an example of each.

impicit : happens automatic when js engine convert variabel from a data type into another when making an operation on them :

explicit : when you manually cast a var into another data type :

```
> var s1 = "sss"
  var s2 = 5
  var s5 = s1 + s2
  console.log(typeof(s3))
  var s3 = "55"
  var s4 = Number(s3)
  console.log(typeof(s4))
string
number
```

11. What will be the result and type of the following expressions? Explain your answer.

- **true + 5 >>>> 4** as true is converted into 1
- **"10" - 2 >>>> -12** as 10 is converted
- **12 - "1a" >>>>>>** NaN as the sec var cant convert and (num - NaN = NAN)
- **5 / 0 >>>>>>>** - infinity
- **5 + undefined >>>>>>>** NaN

12- **What will be logged to the console in the following code? Explain each step.**

var a = "15.5"; // STRING

var b = +a; // string is casted into num and added to b which is zero

console.log(b, typeof b); // logs: 15.5 'number'

13. What will be the output of:

var result = 20 > true < 5 == 1;

console.log(result);

Explain why.

20 > true = true(1) , true(1) < 5 = true(1) , true(1) == 1 = true

logs : true

14. Write a function that takes a string and returns true if it can be converted to a valid number, and false otherwise.

```
> function validNum (str) {
      var x = isNaN(str)
      return !x
  }
  validNum(" 5 ")
< true
```

15. Write a program that prints all numbers from 1 to 20 using a while loop.

```
> let i = 1;

  while (i <= 20) {
      console.log(i);
      i++;
  }
  1
  2
  3
  4
  5
  6
  7
  8
  9
  10
  11
  12
  13
  14
  15
  16
  17
  18
  19
  20
< 20
> |
```

16. Write a program that asks the user to enter numbers until they enter 0, using a do...while loop. After the loop ends, print the sum of all entered numbers (excluding 0).

```
> let sum = 0;
  let number;

  do {
      number = parseInt(prompt("enter number"));
      sum += number;
  } while (number !== 0);

  console.log(sum);
  7
```

17.Write a program that takes a number from 1 to 7 and prints the corresponding day of the week using a switch statement. Use a for loop to test your program with all numbers from 1 to 7.

```
> for (var i = 1; i <= 7; i++) {
      var n = parseInt(prompt("Enter a number"));

      switch (n) {
          case 1:
              console.log('Saturday');
              break;
          case 2:
              console.log('Sunday');
              break;
          case 3:
              console.log('Monday');
              break;
          case 4:
              console.log('Tuesday');
              break;
          case 5:
              console.log('Wednesday');
              break;
          case 6:
              console.log('Thursday');
              break;
          case 7:
              console.log('Friday');
              break;
      }
  }
```

```
Saturday
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
```