Q1. Check number between 10 and 50

Logical AND (&&) checks both conditions. If both are true, output is Valid Number.

```
let num = 25;
if (num >= 10 && num <= 50) {
  console.log("Valid Number");
} else {
  console.log("Invalid Number");
}
```

Q2. Login eligibility using AND

Login succeeds only if username and password both match.

```
let username = "admin";
let password = "1234";

if (username === "admin" && password === "1234") {
  console.log("Login Successful");
} else {
  console.log("Login Failed");
}
```

Q3. Even or Odd using ternary

Ternary operator is a short form of if-else.

```
let n = 7;
let result = (n % 2 === 0) ? "Even" : "Odd";
console.log(result);
```

Q4. Operator precedence output

AND and NOT are evaluated before OR, so final output is true.

```
console.log((10 === "10") || (5 > 2) && !(3 < 1));
```

Q5. Type conversion output

+ concatenates strings, other operators convert string to number.

```
console.log("5" + 2);
console.log("5" - 2);
console.log("5" * 2);
console.log("5" / 2);
```

Q6. Explicit conversion

Number() converts string to number. Boolean() converts to true/false.

```
let value = "100";
console.log(Number(value));
console.log(Boolean(value));
```

Q7. Boolean outputs

Empty values are false, non-empty values are true.

```
console.log(Boolean(""));
console.log(Boolean(" "));
console.log(Boolean(0));
console.log(Boolean([]));
```

Q8. Grade calculation

if-else if ladder checks conditions from top to bottom.

```
let marks = 78;

if (marks >= 90) console.log("Grade A");
else if (marks >= 75) console.log("Grade B");
else if (marks >= 50) console.log("Grade C");
else console.log("Fail");
```

Q9. Traffic signal using switch

Switch case executes matching condition.

```
let signal = "red";

switch(signal) {
  case "red": console.log("Stop"); break;
  case "yellow": console.log("Ready"); break;
  case "green": console.log("Go"); break;
  default: console.log("Invalid Signal");
}
```

Q10. Nested if eligibility check

Each condition is checked step by step.

```
let age = 20, height = 165, weight = 55;

if (age >= 18) {
  if (height >= 160) {
    if (weight >= 50) {
      console.log("Selected");
    } else console.log("Weight failed");
  } else console.log("Height failed");
} else console.log("Age failed");
```