

1. Ten basic **while** loop exercises

1.1 – Count 1 to 5

Write a program that:

- Creates a variable **num** with the value **1**.
 - Uses a **while** loop to print the numbers **1, 2, 3, 4, 5** each on its own line.
 - Inside the loop:
 - Print **num**.
 - Increase **num** by **1**.
 - The loop must stop when **num** becomes **6**.
-

1.2 – Count down from 5 to 1

Write a program that:

- Creates a variable **num** with the value **5**.
 - Uses a **while** loop to print **5, 4, 3, 2, 1** each on its own line.
 - Inside the loop:
 - Print **num**.
 - Decrease **num** by **1**.
 - The loop must stop when **num** is **0**.
-

1.3 – Sum of numbers 1–10

Write a program that:

- Creates `num = 1` and `sum = 0`.
 - Uses a `while` loop that runs as long as `num` is less than or equal to `10`.
 - In each iteration:
 - Add `num` to `sum`.
 - Increase `num` by `1`.
 - After the loop, print the final value of `sum` (should be the sum of 1–10).
-

1.4 – Print even numbers from 2 to 10

Write a program that:

- Creates `num = 2`.
 - Uses a `while` loop to print the even numbers: `2, 4, 6, 8, 10`.
 - In each iteration:
 - Print `num`.
 - Increase `num` by `2`.
 - The loop stops when `num` becomes `12`.
-

1.5 – Ask until number ≥ 10 (no actual input, just simulate)

Write a program that:

- Creates `num = 3`.
- Uses a `while` loop that runs as long as `num` is **less than 10**.

- In each iteration:
 - Print "`num is X`" where X is the current value.
 - Increase `num` by 2.
 - Stop when `num` reaches or passes 10.
-

1.6 – Print 1 to 3

Write a program that uses a `while` loop and a counter to print the numbers 1, 2, 3.

1.7 – Print multiples of 5 up to 25

Write a program that uses a `while` loop to print 5, 10, 15, 20, 25.

1.8 – Countdown by 2

Write a program that starts with `num = 10` and uses a `while` loop to print 10, 8, 6, 4, 2.

1.9 – Print “hello” 4 times

Write a program that uses a `while` loop and a counter to print "`hello`" exactly 4 times.

1.10 – Sum of even numbers 2–10

Write a program that uses a `while` loop to calculate and print the sum of the even numbers 2, 4, 6, 8, 10.

2. Ten basic **for** loop exercises

(First 5 detailed, next 5 shorter.)

2.1 – Count 1 to 5

Write a **for** loop that:

- Starts a counter at **1**.
 - Runs while the counter is less than or equal to **5**.
 - Increases the counter by **1** each time.
 - Prints the counter in each iteration (1, 2, 3, 4, 5).
-

2.2 – Count down from 5 to 1

Write a **for** loop that:

- Starts a counter at **5**.
 - Runs while the counter is greater than or equal to **1**.
 - Decreases the counter by **1** each time.
 - Prints the counter (5, 4, 3, 2, 1).
-

2.3 – Sum 1–10 with **for**

Write a program that:

- Has a variable **sum** starting at **0**.
- Uses a **for** loop from **1** to **10** (inclusive).
- In each iteration adds the loop variable to **sum**.
- After the loop, prints the final **sum**.

2.4 – Print even numbers 2–10

Write a `for` loop that:

- Starts at `2`.
 - Ends at `10` (inclusive).
 - Increases by `2` each time.
 - Prints the loop variable (2, 4, 6, 8, 10).
-

2.5 – Print “JS” 3 times

Write a `for` loop that:

- Runs exactly 3 times.
 - In each iteration prints `"JS"`.
-

2.6 – Print 1–4

Write a `for` loop that prints the numbers `1, 2, 3, 4`.

2.7 – Print multiples of 3 up to 15

Write a `for` loop that prints `3, 6, 9, 12, 15`.

2.8 – Print numbers from 10 down to 0 (step -2)

Write a `for` loop that prints `10, 8, 6, 4, 2, 0`.

2.9 – Sum 5–15

Write a program that uses a `for` loop to calculate and print the sum of the numbers from 5 to 15 (inclusive).

2.10 – Print index and square

Write a `for` loop that runs from 1 to 4, and in each iteration prints the loop index and its square (for example: 1 1, 2 4, etc.).

3. Ten exercises: turn `while` into `for`

3.1

```
let i = 1;
while (i <= 5) {
  console.log(i);
  i++;
}
```

3.2

```
let i = 10;
while (i >= 1) {
  console.log(i);
  i--;
}
```

3.3

```
let i = 2;
while (i <= 10) {
  console.log(i);
  i += 2;
}
```

3.4

```
let i = 5;
while (i <= 15) {
  console.log("Number:", i);
  i++;
}
```

3.5

```
let i = 3;
while (i < 12) {
  console.log(i * 2);
  i += 3;
}
```

3.6

```
let i = 0;
while (i < 4) {
  console.log("hello");
  i++;
}
```

3.7

```
let i = 1;
while (i <= 3) {
  console.log("i is", i);
  i++;
}
```

3.8

```
let i = 10;
while (i >= 0) {
  console.log(i);
  i -= 2;
}
```

3.9

```
let i = 1;
let sum = 0;
while (i <= 5) {
  sum = sum + i;
  i++;
}
console.log(sum);
```

3.10

```
let i = 5;
while (i < 10) {
  console.log(i + 1);
  i++;
}
```

4. Ten exercises: turn **for** into **while**

4.1

```
for (let i = 1; i <= 5; i++) {
  console.log(i);
}
```

4.2

```
for (let i = 10; i >= 1; i--) {
  console.log(i);
}
```

4.3

```
for (let i = 2; i <= 10; i += 2) {
  console.log(i);
}
```

4.4

```
let sum = 0;
for (let i = 1; i <= 10; i++) {
  sum += i;
}
console.log(sum);
```

4.5

```
for (let i = 0; i < 3; i++) {
  console.log("Hi");
}
```

4.6

```
for (let i = 5; i <= 15; i++) {  
  console.log("i is", i);  
}
```

4.7

```
for (let i = 10; i >= 0; i -= 2) {  
  console.log(i);  
}
```

4.8

```
for (let i = 1; i <= 4; i++) {  
  console.log(i * i);  
}
```

4.9

```
for (let i = 3; i < 12; i += 3) {  
  console.log(i);  
}
```

4.10

```
for (let i = 1; i <= 3; i++) {  
  console.log("Loop:", i);  
}
```

5. Ten exercises: fix infinite **while** loops

Each of these **never ends** as written.

What is wrong? How do you change it so it stops correctly? (Don't change the goal of the loop.)

5.1

```
let i = 1;  
while (i <= 5) {  
  console.log(i);  
}
```

5.2

```
let i = 10;
while (i >= 0) {
  console.log(i);
  i++; // wrong direction
}
```

5.3

```
let i = 0;
while (i < 3) {
  console.log("hello");
  // missing change to i
}
```

5.4

```
let i = 5;
while (i > 0) {
  console.log(i);
  i = i + 1;
}
```

5.5

```
let i = 1;
while (i !== 10) {
  console.log(i);
  i -= 1;
}
```

5.6

```
let i = 2;
while (i < 20) {
  console.log(i);
  i = i - 2;
}
```

5.7

```
let i = 0;
while (i <= 4) {
  console.log(i);
  // no change to i
}
```

5.8

```
let i = 10;
while (i >= 0) {
  console.log(i);
  // no change to i
}
```

5.9

```
let i = 1;
while (i < 5) {
  console.log(i);
  i = i + 0; // useless change
}
```

5.10

```
let i = 3;
while (i > 0) {
  console.log(i);
  i = i + 2;
}
```

6. Ten exercises: fix infinite **for** loops

Same idea: these loops never end (or are logically wrong). Students need to fix them.

6.1

```
for (let i = 1; i <= 5; ) {
  console.log(i);
}
```

6.2

```
for (let i = 10; i >= 0; i++) {
  console.log(i);
}
```

6.3

```
for (let i = 0; i < 3; ) {  
  console.log("hi");  
  // missing i++  
}
```

6.4

```
for (let i = 5; i > 0; i++) {  
  console.log(i);  
}
```

6.5

```
for (let i = 1; i !== 10; i--) {  
  console.log(i);  
}
```

6.6

```
for (let i = 2; i < 20; i -= 2) {  
  console.log(i);  
}
```

6.7

```
for (let i = 0; i <= 4; ) {  
  console.log(i);  
  i = i; // no real change  
}
```

6.8

```
for (let i = 10; i >= 0; ) {  
  console.log(i);  
  // i not changed  
}
```

6.9

```
for (let i = 3; i > 0; ) {  
  console.log(i);  
  i = i + 2;  
}
```

6.10

```
for (let i = 1; i < 5; i = i + 0) {  
  console.log(i);  
}
```

7. Ten exercises: while / for – what will be printed?

7.1

```
let i = 1;  
while (i <= 3) {  
  console.log(i);  
  i++;  
}
```

What will be printed?

7.2

```
let i = 5;  
while (i > 0) {  
  console.log(i);  
  i--;  
}
```

What will be printed?

7.3

```
let sum = 0;  
for (let i = 1; i <= 4; i++) {  
  sum = sum + i;  
}  
console.log(sum);
```

What will be printed?

7.4

```
for (let i = 2; i <= 10; i += 2) {  
  console.log(i);  
}
```

What will be printed?

7.5

```
let i = 0;  
while (i < 3) {  
  console.log("loop");  
  i++;  
}  
console.log("end");
```

What will be printed?

7.6

```
for (let i = 3; i > 0; i--) {  
  console.log("i is", i);  
}
```

What will be printed?

7.7

```
let i = 1;  
while (i <= 5) {  
  if (i % 2 === 0) {  
    console.log("even", i);  
  }  
  i++;  
}
```

What will be printed?

7.8

```
let product = 1;
for (let i = 1; i <= 3; i++) {
  product = product * i;
}
console.log(product);
```

What will be printed?

7.9

```
let i = 10;
while (i >= 6) {
  console.log(i);
  i -= 2;
}
```

What will be printed?

7.10

```
for (let i = 1; i <= 5; i++) {
  if (i === 3) {
    console.log("middle");
  } else {
    console.log(i);
  }
}
```

What will be printed?

If you want a follow-up, I can:

- Add a **“loops + if + operators” summary pack**,
- Or turn some of these into a printable worksheet / Google Sheets table.