Arrow functions and their syntax

Let’s break down **Arrow Functions** in JavaScript — a modern, concise way to write functions introduced in **ES6 (ECMAScript 2015)**.

🚀 What is an Arrow Function?

Arrow functions are a **shorter syntax** for writing function expressions. They're especially useful for **inline callbacks**, **array operations**, and scenarios where you want to **retain the `this` context**.

🔷 Basic Syntax

```
const functionName = (parameters) => {
  // function body
};
```

✅ Examples

1. Single parameter, single line

```
const greet = name => `Hello, ${name}!`;
console.log(greet("Abhi")); // Hello, Abhi!
```

> Note: Parentheses around name are optional when there’s only one parameter.

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2. Multiple parameters

```
const add = (a, b) => a + b;
```

```
console.log(add(3, 5)); // 8
```

3. No parameters

```
const sayHi = () => console.log("Hi!");
sayHi(); // Hi!
```

4. Multi-line function body

```
const multiply = (a, b) => {
  const result = a * b;
  return result;
};
console.log(multiply(2, 4)); // 8
```

> If using curly braces, you must explicitly use return.

🧠 Key Differences from Regular Functions

Feature	Arrow Function	Regular Function
Syntax	Concise, no `function` keyword	Verbose
`this` binding	**Inherits `this` from parent scope**	Gets its own `this`
`arguments` object	❌ Not available	✅ Available
Hoisting	❌ Not hoisted	✅ Function declarations are
Usage as constructor	❌ Cannot be used with `new`	✅ Can be used with `new`

🔥 Lexical `this` Example

Arrow functions **do not bind their own `this`**, they use `this` from their outer (lexical) context.

```
const person = {
  name: "Abhi",
  greet: function() {
    setTimeout(() => {
      console.log(`Hello, ${this.name}`); // ✅ Works
    }, 1000);
  }
};

person.greet(); // Hello, Abhi
```

Compare with a regular function (which breaks `this`):

```
greet: function() {
  setTimeout(function() {
    console.log(`Hello, ${this.name}`); // ❌ undefined
  }, 1000);
}
```

🧠 When to Use Arrow Functions

✅ Ideal for:

- Short, concise callbacks
- Array operations (`map`, `filter`, `reduce`)
- Retaining outer `this` in methods

❌ Avoid in:

- Object methods that rely on `this`
- Functions that use `arguments`, `super`, or need to be constructors

🧾 Summary

Feature	Arrow Function Syntax
Basic form	`(params) ⇒ expression`
No `this` binding	Uses outer `this`
Concise and clean	Yes ✅
Cannot use as `new`	No ❌
Not hoisted	No ❌

Would you like to explore **Function Parameters vs Arguments** next?