

# New ES6 Syntax



let, const and Block Scoping

Arrow Functions =>

Default Function Parameters

Rest and Spread ...

Object Literal Extensions

for ... of Loops

Octal and Binary Literals

Template Literals

Destructuring



# let, const and Block Scoping



```
'use strict';  
console.log(productId);  
var productId = 12;
```

## Question

What shows in the console?

---

## Answer

undefined

```
'use strict';  
console.log(productId);  
let productId = 12;
```

## Question

What shows in the console?

---

## Answer

ReferenceError: productId is not defined

```
'use strict';  
let productId = 12;  
console.log(productId);
```

## Question

What shows in the console?

---

## Answer

12

```
'use strict';  
let productId;  
console.log(productId);
```

## Question

What shows in the console?

---

## Answer

undefined

```
'use strict';  
let productId = 12;  
{  
  let productId = 2000;  
}  
console.log(productId);
```

## Question

What shows in the console?

---

## Answer

12

```
'use strict';  
{  
  let productId = 2000;  
}  
console.log(productId);
```

## Question

What shows in the console?

---

## Answer

Reference Error: productId is not defined



```
'use strict';  
function updateProductId() {  
    productId = 12;  
}  
let productId = null;  
updateProductId();  
console.log(productId);
```

## Question

What shows in the console?

---

## Answer

12

```
'use strict';  
let productId = 42;  
for (let productId = 0; productId < 10; productId++)  
{  
}  
console.log(productId);
```



What shows in the console?



42

```
'use strict';  
let updateFunctions = [];  
for (var i = 0; i < 2; i++) {  
    updateFunctions.push(function () { return i; });  
}  
console.log(updateFunctions[0]());
```



What shows in the console?



2

```
'use strict';  
let updateFunctions = [];  
for (let i = 0; i < 2; i++) {  
  updateFunctions.push(function () { return i; });  
}  
console.log(updateFunctions[0]());
```



What shows in the console?



0

```
'use strict';  
const MARKUP_PCT = 100;  
console.log(MARKUP_PCT);
```

## Question

What shows in the console?

---

## Answer

100

```
'use strict';  
const MARKUP_PCT;  
console.log(MARKUP_PCT);
```

## Question

What shows in the console?

---

## Answer

SyntaxError: Unexpected token ;

```
'use strict';  
const MARKUP_PCT = 100;  
MARKUP_PCT = 10;  
console.log(MARKUP_PCT);
```

## Question

What shows in the console?

---

## Answer

TypeError: Assignment to constant variable.

```
'use strict';  
const MARKUP_PCT = 100;  
if (MARKUP_PCT > 0) {  
  const MARKUP_PCT = 10;  
}  
console.log(MARKUP_PCT);
```

## Question

What shows in the console?

---

## Answer

100



# Arrow Functions

=>



```
'use strict';  
var getPrice = () => 5.99;  
console.log(typeof getPrice);
```

## Question

What shows in the console?

---

## Answer

function

```
'use strict';  
var getPrice = () => 5.99;  
console.log(getPrice());
```

## Question

What shows in the console?

---

## Answer

5.99

```
'use strict';  
var getPrice = count => count * 4.00;  
console.log(getPrice(2));
```

## Question

What shows in the console?

---

## Answer

8

```
'use strict';  
var getPrice = (count, tax) => count * 4.00 * (1 + tax);  
console.log(getPrice(2, .07));
```



What shows in the console?



8.56

```
'use strict';  
var getPrice = (count, tax) => {  
  var price = count * 4.00;  
  price *= (1 + tax);  
  return price;  
}  
console.log(getPrice(2, .07));
```

## Question

What shows in the console?

---

## Answer

8.56

```
'use strict';  
document.addEventListener('click', function () {  
  console.log(this);  
});
```



What shows in the console?



#document

```
'use strict';  
document.addEventListener('click', () => console.log(this));
```



What shows in the console?



Window {...}



```
'use strict';  
var invoice = {  
  number: 123,  
  process: function () {  
    console.log(this);  
  }  
};  
invoice.process();
```

## Question

What shows in the console?

---

## Answer

```
Object {  
  number: 123  
}
```

```
'use strict';  
var invoice = {  
  number: 123,  
  process: () => console.log(this)  
};  
invoice.process();
```

## Question

What shows in the console?

---

## Answer

Window { ... }

```
'use strict';  
var invoice = {  
  number: 123,  
  process: function () {  
    return () => console.log(this.number);  
  }  
};  
invoice.process();
```



What shows in the console?



123

```
'use strict';  
var invoice = {  
  number: 123,  
  process: function () {  
    return () => console.log(this.number);  
  }  
};  
var newInvoice = {  
  number: 456  
};  
invoice.process().bind(newInvoice)();
```



What shows in the console?



123

```
'use strict';  
var invoice = {  
  number: 123,  
  process: function () {  
    return () => console.log(this.number);  
  }  
};  
var newInvoice = {  
  number: 456  
};  
invoice.process().call(newInvoice);
```



What shows in the console?



123

```
'use strict';  
var getPrice = ()  
    => 5.99;  
console.log(typeof getPrice);
```

## Question

What shows in the console?

---

## Answer

SyntaxError: unexpected  
token =>

```
'use strict';  
var getPrice = () => 5.99;  
console.log(getPrice.hasOwnProperty("prototype"));
```



What shows in the console?



false

# Default Function Parameters





```
'use strict';  
var getProduct = function(productId = 1000) {  
  console.log(productId);  
};  
getProduct();
```



What shows in the console?



1000

```
'use strict';  
var getProduct = function(productId = 1000, type = 'software') {  
  console.log(productId + ', ' + type);  
};
```

```
getProduct(undefined, 'hardware');
```



What shows in the console?



1000, hardware

```
'use strict';  
var getTotal = function(price, tax = price * 0.07 ) {  
  console.log(price + tax);  
};  
  
getTotal(5.00);
```



What shows in the console?



5.35

```
'use strict';  
var baseTax = 0.07;  
var getTotal = function(price, tax = price * baseTax ) {  
  console.log(price + tax);  
};  
  
getTotal(5.00);
```



What shows in the console?



5.35

```
'use strict';  
var generateBaseTax = () => 0.07;  
var getTotal = function(price, tax = price * generateBaseTax() ) {  
  console.log(price + tax);  
};  
  
getTotal(5.00);
```



What shows in the console?



5.35

```
'use strict';  
var getTotal = function(price, tax = 0.07 ) {  
  console.log(arguments.length);  
};  
  
getTotal(5.00);
```



What shows in the console?



1

```
'use strict';  
var getTotal = function(price = adjustment, adjustment = 1.00) {  
    console.log(price + adjustment);  
};  
  
getTotal();
```



What shows in the console?



SyntaxError: Use before  
declaration

```
'use strict';  
var getTotal = function(price = adjustment, adjustment = 1.00) {  
  console.log(price + adjustment);  
};  
  
getTotal(5.00);
```



What shows in the console?



6



```
'use strict';  
var getTotal = new Function("price = 20.00", "return price;");  
console.log(getTotal());
```



What shows in the console?



20

# Rest and Spread



```
'use strict';  
var showCategories = function (productId, ...categories) {  
  console.log(categories instanceof Array);  
};  
showCategories(123, 'search', 'advertising');
```



What shows in the console?



true

```
'use strict';  
var showCategories = function (productId, ...categories) {  
  console.log(categories);  
};  
showCategories(123, 'search', 'advertising');
```



What shows in the console?



['search', 'advertising']

```
'use strict';  
var showCategories = function (productId, ...categories) {  
  console.log(categories);  
};  
showCategories(123);
```



What shows in the console?



```
'use strict';  
var showCategories = function (productId, ...categories) {  
};  
console.log(showCategories.length);
```



What shows in the console?



1

```
'use strict';  
var showCategories = function (productId, ...categories) {  
  console.log(arguments.length);  
};  
showCategories(123, 'search', 'advertising');
```



What shows in the console?



3

```
'use strict';  
var showCategories =  
    new Function("...categories", "return categories;");  
  
console.log(showCategories('search', 'advertising'));
```



What shows in the console?



['search', 'advertising']



```
'use strict';  
var prices = [12, 20, 18];  
var maxPrice = Math.max(...prices);  
console.log(maxPrice);
```

## Question

What shows in the console?

---

## Answer

20

```
'use strict';  
var prices = [12, 20, 18];  
var newPriceArray = [...prices];  
console.log(newPriceArray);
```

## Question

What shows in the console?

---

## Answer

[12, 20, 18]

```
'use strict';  
var newPriceArray = Array(...[,]);  
console.log(newPriceArray);
```

## Question

What shows in the console?

---

## Answer

[undefined, undefined]

```
'use strict';  
var newPriceArray = [...[,]];  
console.log(newPriceArray);
```

## Question

What shows in the console?

---

## Answer

[undefined, undefined]

```
'use strict';  
var maxCode = Math.max(..."43210");  
console.log(maxCode);
```

## Question

What shows in the console?

---

## Answer

4

```
'use strict';  
var codeArray = ["A", ..."BCD", "E"];  
console.log(codeArray);
```

## Question

What shows in the console?

---

## Answer

```
["A","B","C","D","E"]
```

# Object Literal Extensions



```
'use strict';  
var price = 5.99, quantity = 30;  
var productView = {  
  price,  
  quantity  
};  
console.log(productView);
```

## Question

What shows in the console?

---

## Answer

```
{price: 5.99,  
  quantity: 30}
```



```
'use strict';  
var price = 5.99, quantity = 10;  
var productView = {  
  price,  
  quantity,  
  calculateValue() {  
    return this.price * this.quantity  
  }  
};  
console.log(productView.calculateValue());
```



What shows in the console?



59.90000000000000006

```
'use strict';  
var price = 5.99, quantity = 10;  
var productView = {  
  price: 7.99,  
  quantity: 1,  
  calculateValue() {  
    return this.price * this.quantity  
  }  
};  
console.log(productView.calculateValue());
```



What shows in the console?



59.90000000000000006

```
'use strict';  
var price = 5.99, quantity = 10;  
var productView = {  
  price,  
  quantity,  
  "calculate value"() {  
    return this.price * this.quantity  
  }  
};  
console.log(productView["calculate value"]());
```



What shows in the console?



59.90000000000000006

```
'use strict';  
var field = 'dynamicField'  
var price = 5.99;  
var productView = {  
  [field]: price  
};  
console.log(productView);
```

## Question

What shows in the console?

---

## Answer

{dynamicField: 5.99}

```
'use strict';  
var field = 'dynamicField'  
var price = 5.99;  
var productView = {  
  [field + "-001"]: price  
};  
console.log(productView);
```

## Question

What shows in the console?

---

## Answer

```
{dynamicField-001: 5.99}
```

```
'use strict';  
var method = 'doIt'  
var productView = {  
  [method + "-001"]() {  
    console.log("in a method");  
  }  
};  
productView['doIt-001']();
```

## Question

What shows in the console?

---

## Answer

in a method

```
'use strict';  
var ident = 'productId';  
var productView = {  
  get [ident] () { return true; },  
  set [ident] (value) { }  
};  
console.log(productView.productId);
```

## Question

What shows in the console?

---

## Answer

true

for ... of Loops





```
'use strict';  
var categories = ['hardware', 'software', 'vaporware'];  
for (var item of categories) {  
  console.log(item);  
}
```



What shows in the console?



hardware  
software  
vaporware

```
'use strict';  
var categories = [,,];  
for (var item of categories) {  
    console.log(item);  
}
```

## Question

What shows in the console?

---

## Answer

undefined

undefined

```
'use strict';  
var codes = "ABCDF";  
var count = 0;  
for (var code of codes) {  
    count++;  
}  
console.log(count);
```

## Question

What shows in the console?

---

## Answer

5

# Octal and Binary Literals



```
'use strict';  
var value = 0o10;  
console.log(value);
```

## Question

What shows in the console?

---

## Answer

8

```
'use strict';  
var value = 0O10;  
console.log(value);
```

## Question

What shows in the console?

---

## Answer

8

```
'use strict';  
var value = 0b10;  
console.log(value);
```

## Question

What shows in the console?

---

## Answer

2

```
'use strict';  
var value = 0B10;  
console.log(value);
```

## Question

What shows in the console?

---

## Answer

2



# Template Literals



```
'use strict';  
let invoiceNum = '1350';  
console.log(`Invoice Number: ${invoiceNum}`);
```



What shows in the console?



Invoice Number: 1350

```
'use strict';  
let invoiceNum = '1350';  
console.log(`Invoice Number: ${invoiceNum}`);
```



What shows in the console?



Invoice Number: 1350

```
'use strict';  
let invoiceNum = '1350';  
console.log(`Invoice Number: \${invoiceNum}`);
```



What shows in the console?



Invoice Number: \${invoiceNum}

```
'use strict';  
let message = `A  
B  
C`;  
console.log(message);
```

## Question

What shows in the console?

---

## Answer

A

B

C

```
'use strict';  
let invoiceNum = '1350';  
console.log(`Invoice Number: ${"INV-" + invoiceNum}`);
```



What shows in the console?



Invoice Number:  
INV-1350

```
'use strict';
```

```
function showMessage(message) {  
  let invoiceNum = '99';  
  console.log(message);  
}
```

```
let invoiceNum = '1350';  
showMessage(`Invoice Number: ${invoiceNum}`);
```



What shows in the console?



Invoice Number: 1350

```
'use strict';
```

```
function processInvoice(segments) {  
  console.log(segments);  
}
```

```
processInvoice `template`;
```



What shows in the console?



["template"]



```
'use strict';
```

```
function processInvoice(segments, ...values) {  
  console.log(segments);  
  console.log(values);  
}
```

```
let invoiceNum = '1350';  
let amount = '2000';  
processInvoice `Invoice: ${invoiceNum} for ${amount}`;
```



What shows in the console?



```
["Invoice: ", " for ", ""]  
[1350, 2000]
```

# Destructuring



```
'use strict';  
let salary = ['32000', '50000', '75000'];  
let [ low, average, high ] = salary;  
console.log(average);
```



What shows in the console?



50000

```
'use strict';  
let salary = ['32000', '50000'];  
let [ low, average, high ] = salary;  
console.log(high);
```



What shows in the console?



undefined

```
'use strict';  
let salary = ['32000', '50000', '75000'];  
let [ low, , high ] = salary;  
console.log(high);
```



What shows in the console?



75000

```
'use strict';  
let salary = ['32000', '50000', '75000'];  
let [ low, ...remaining ] = salary;  
console.log(remaining);
```



What shows in the console?



["50000", "75000"]

```
'use strict';  
let salary = ['32000', '50000'];  
let [ low, average, high = '88000' ] = salary;  
console.log(high);
```



What shows in the console?



88000

```
'use strict';  
let salary = ['32000', '50000', ['88000', '99000'] ];  
let [low, average, [actualLow, actualHigh]] = salary;  
console.log(actualLow);
```



What shows in the console?



88000



```
'use strict';  
let salary = ['32000', '50000'];  
let low, average, high;  
[ low, average, high = '88000' ] = salary;  
console.log(high);
```



What shows in the console?



88000

```
'use strict';
```

```
function reviewSalary([low, average], high = '88000') {  
  console.log(average);  
}
```

```
reviewSalary(['32000', '50000']);
```



What shows in the console?



50000

```
'use strict';  
let salary = {  
  low: '32000',  
  average: '50000',  
  high: '75000'  
};  
let { low, average, high } = salary;  
console.log(high);
```

## Question

What shows in the console?

---

## Answer

75000

```
'use strict';  
let salary = {  
  low: '32000',  
  average: '50000',  
  high: '75000'  
};  
let { low: newLow, average: newAverage, high: newHigh } = salary;  
console.log(newHigh);
```



What shows in the console?



75000

```
'use strict';  
let salary = {  
  low: '32000',  
  average: '50000',  
  high: '75000'  
};  
let newLow, newAverage, newHigh;  
{ low: newLow, average: newAverage, high: newHigh } = salary;  
console.log(newHigh);
```



What shows in the console?



Syntax Error

```
'use strict';  
let salary = {  
  low: '32000',  
  average: '50000',  
  high: '75000'  
};  
let newLow, newAverage, newHigh;  
({ low: newLow, average: newAverage, high: newHigh } = salary);  
console.log(newHigh);
```



What shows in the console?



75000

```
'use strict';  
let [maxCode, minCode] = 'AZ';  
console.log(`min: ${minCode} max: ${maxCode}`);
```



What shows in the console?



min: Z max: A

# Advanced Destructuring





```
'use strict';  
let [high, low] = [,];  
console.log(`high: ${high} low: ${low}`);
```



What shows in the console?



high: undefined  
low: undefined

```
'use strict';  
let [high, low] = undefined;  
console.log(`high: ${high} low: ${low}`);
```



What shows in the console?



Runtime Error: Unable to get property  
'Symbol.iterator' of undefined or null  
reference

```
'use strict';  
let [high, low] = null;  
console.log(`high: ${high} low: ${low}`);
```



What shows in the console?



Runtime Error: Unable to get property  
'Symbol.iterator' of undefined or null  
reference

```
'use strict';  
try {  
  let [ high, low, ] = undefined;  
}  
catch (e) {  
  console.log(e.name);  
}
```



What shows in the console?



TypeError

```
'use strict';  
let [ high, low, ] = [500, 200];  
console.log(`high: ${high} low: ${low}`);
```



What shows in the console?



high: 500 low: 200

```
'use strict';  
for (let [a, b] of [[5, 10]]) {  
  console.log(`${a} ${b}`);  
}
```



What shows in the console?



5 10

```
'use strict';  
let count = 0;  
for (let [a, b] of [[5, 10]]) {  
  console.log(`${a} ${b}`);  
  count++;  
}  
console.log(count);
```



What shows in the console?



5 10  
1

```
'use strict';  
try {  
  throw [123, 'message'];  
}  
catch ([invoiceNum, errorMessage]) {  
  console.log(`${invoiceNum} ${errorMessage}`);  
}
```



What shows in the console?



123 message



```
'use strict';  
function getResult() {  
  let high, low;  
  return { high, low } = { high: 500, low: 200 };  
}  
  
console.log(getResult());
```



What shows in the console?



{high: 500, low: 200}

```
'use strict';  
let nums = {  
  high: 1000,  
  low: 20,  
  average: 400  
};  
let high, low, average;  
  
({ high, low } = { average } = nums);  
  
console.log(`${high} ${low} ${average}`);
```



What shows in the console?



1000 20 400

# Summary



## let, const and Block Scoping

```
'use strict';  
let productId = 12;  
console.log(productId);
```



# Summary



## Arrow Functions

```
'use strict';  
var getPrice = count => count * 4.00;  
console.log(getPrice(2));
```



# Summary



## Default Function Parameters

```
'use strict';  
var getTotal = function(price, tax = price * 0.07 ) {  
    console.log(price + tax);  
};  
  
getTotal(5.00);
```



# Summary



## Rest and Spread Operators

```
'use strict';  
var showCategories =  
    function (productId, ...categories) {  
    };  
console.log(showCategories.length);
```

```
'use strict';  
var prices = [12, 20, 18];  
var maxPrice = Math.max(...prices);  
console.log(maxPrice);
```



# Summary



## Object Literal Extensions

```
'use strict';  
var method = 'doIt'  
var productView = {  
    [method + "-001"]() {  
        console.log("in a method");  
    }  
};  
productView['doIt-001']();
```



# Summary



## for ... of Loops

```
'use strict';  
var codes = "ABCDF";  
var count = 0;  
for (var code of codes) {  
    count++;  
}  
console.log(count);
```





# Summary



## Octal and Binary Literals

```
'use strict';  
var value = 0o10;  
console.log(value);
```

```
'use strict';  
var value = 0b10;  
console.log(value);
```



# Summary



## Template Literals

```
'use strict';  
let invoiceNum = '1350';  
console.log(`Invoice Number: ${invoiceNum}`);
```



# Summary



## Destructuring

```
'use strict';  
let salary = ['32000', '50000', '75000'];  
let [ low, average, high ] = salary;  
console.log(average);
```

