JSDN

(by example)

Variables and Function Calls

Variables

```
var x = 15
var message = "hi"
var f = function (x, y) {
  var result = x + y
  return result
}
```

(Code)

(Memory)

Variables

```
var x = 15
var message = "hi"
var f = function (x, y) {
  var result = x + y
  return result
}
```

a. Assignment

Variables

```
var x = 15
var message = "hi"
var f = function (x, y) {
  var result = x + y
  return result
}
```

a. Assignment
    a. Evaluate right side

Variables

```
var x = 15
var message = "hi"
var f = function (x, y) {
  var result = x + y
  return result
}
```

a. Assignment
    a. Evaluate right side
    b. Create number

```
15
```

Variables

```
var x = 15
var message = "hi"
var f = function (x, y) {
  var result = x + y
  return result
}
```

a. Assignment
    a. Evaluate right side
    b. Create number
    c. Create var x, point to value

Variables

```
var x = 15
var message = "hi"
var f = function (x, y) {
  var result = x + y
  return result
}
```

a. Assignment
    a. Evaluate right side
    b. Create number
    c. Create var x, point to value

b. Assignment

Variables

```
var x = 15
var message = "hi"
var f = function (x, y) {
  var result = x + y
  return result
}
```

a. Assignment
    a. Evaluate right side
    b. Create number
    c. Create var x, point to value

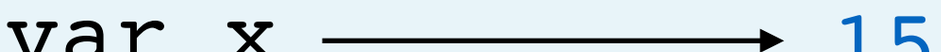
b. Assignment
    a. Evaluate right side

Variables

```
var x = 15
var message = "hi"
var f = function (x, y) {
  var result = x + y
  return result
}
```

a. Assignment
    a. Evaluate right side
    b. Create number
    c. Create var x, point to value

b. Assignment
    a. Evaluate right side
    b. Create string



Variables

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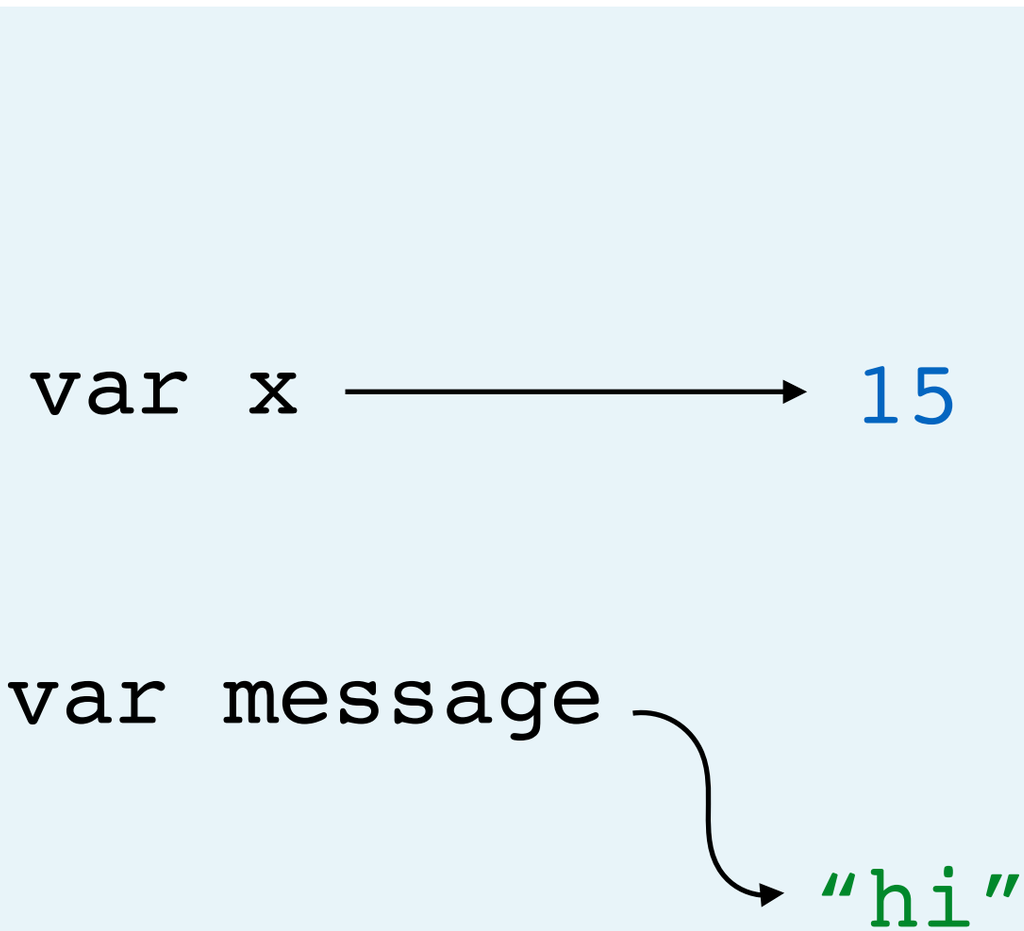
var x = 15
var message = "hi"
var f = function (x, y) {
  var result = x + y
  return result
}
```

a. Assignment
    a. Evaluate right side
    b. Create number
    c. Create var x, point to value
b. Assignment
    a. Evaluate right side
    b. Create string
    c. Create var message, point to value



Variables

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  return result
}
```
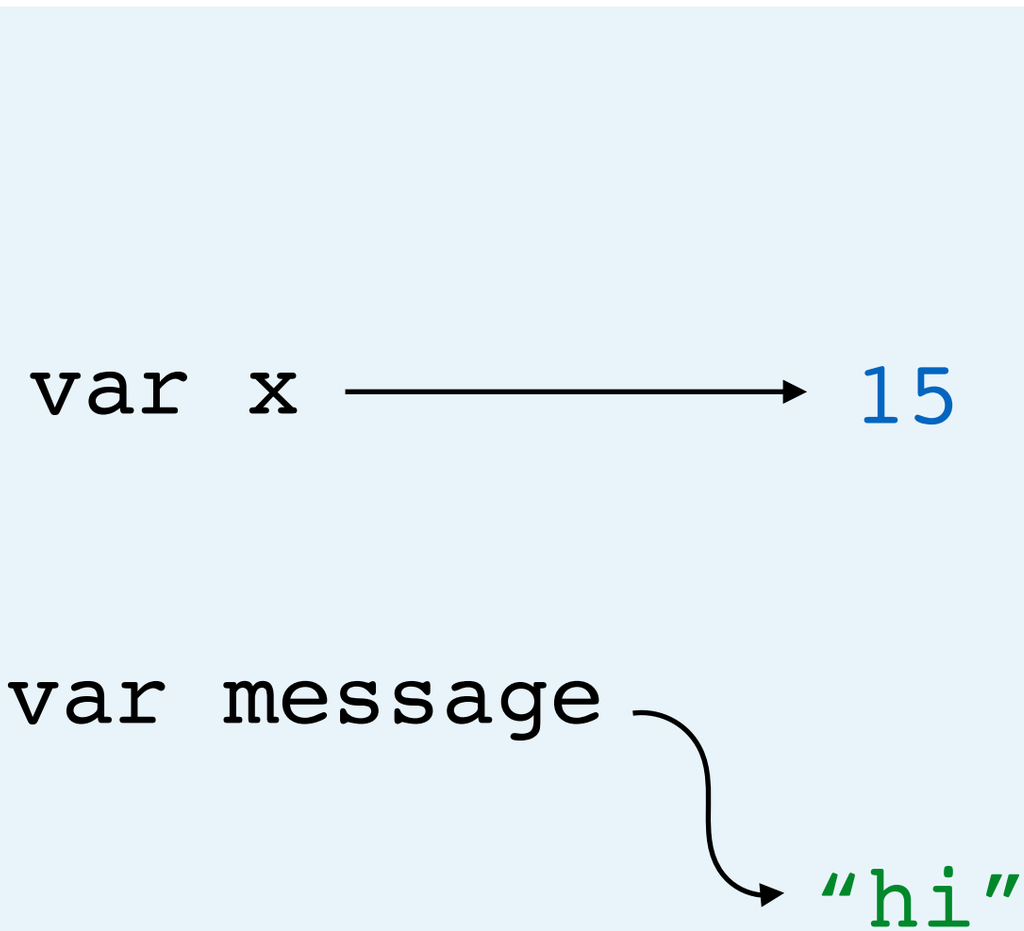

a. Assignment
    a. Evaluate right side
    b. Create number
    c. Create var x, point to value
b. Assignment
    a. Evaluate right side
    b. Create string
    c. Create var message, point to value
c. Assignment



Variables

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var x = 15
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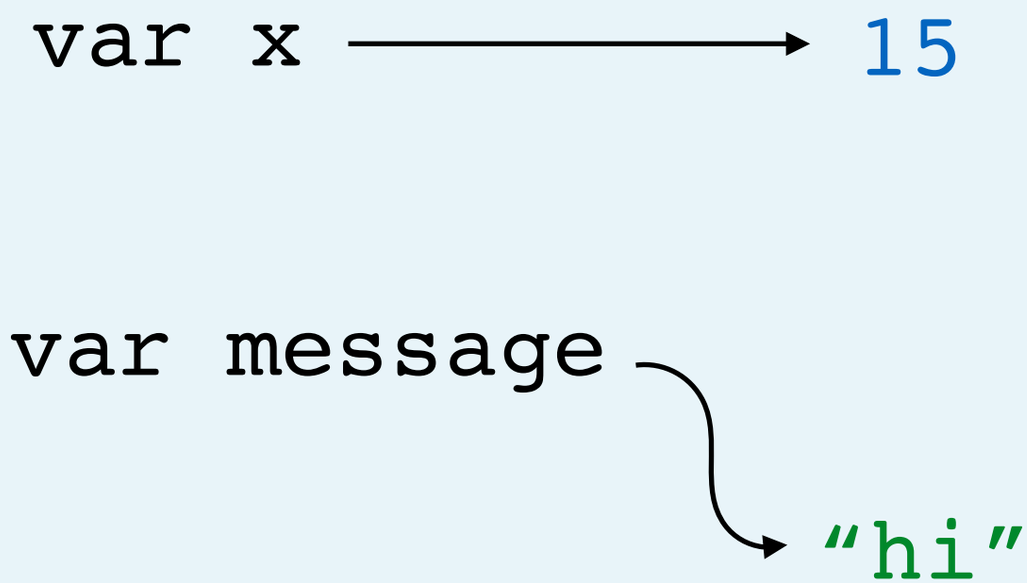
  return result
}
```

a. Assignment
    a. Evaluate right side
    b. Create number
    c. Create var x, point to value
b. Assignment
    a. Evaluate right side
    b. Create string
    c. Create var message, point to value
c. Assignment
    a. Evaluate right side



Variables

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var x = 15
var message = "hi"
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  var result = x + y
  return result
}
```
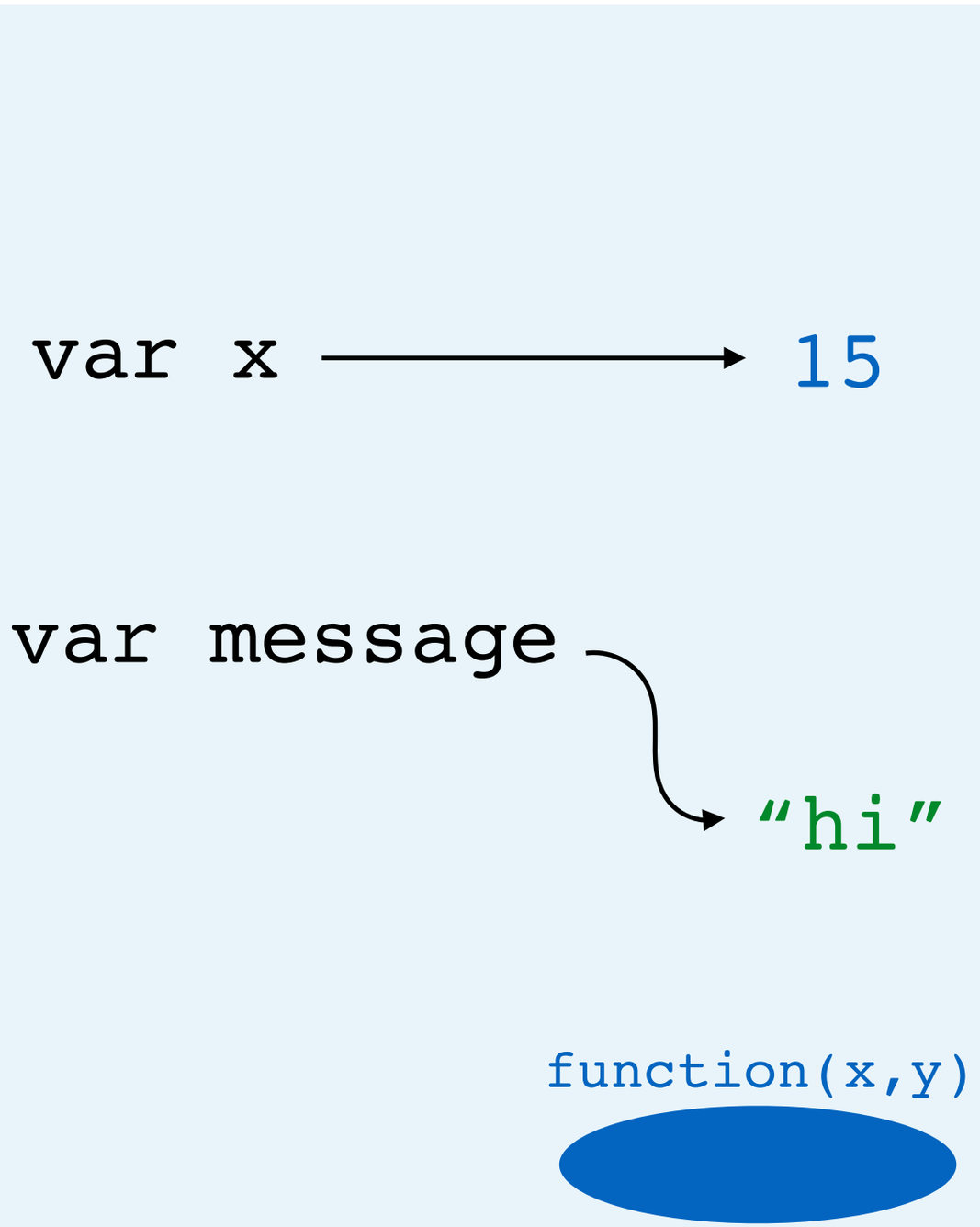
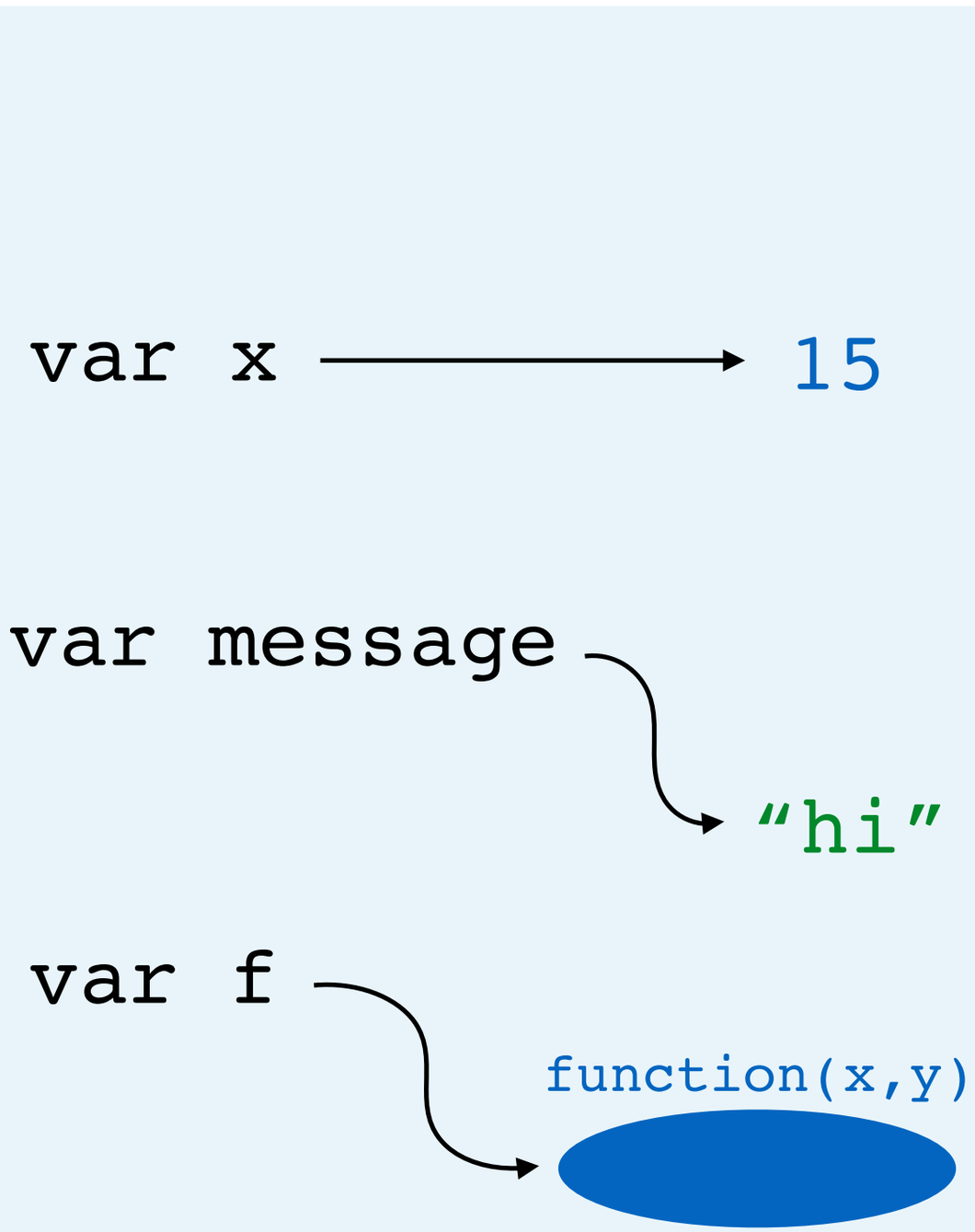

a. Assignment
    a. Evaluate right side
    b. Create number
    c. Create var x, point to value
b. Assignment
    a. Evaluate right side
    b. Create string
    c. Create var message, point to value
c. Assignment
    a. Evaluate right side
    b. Create function



Variables

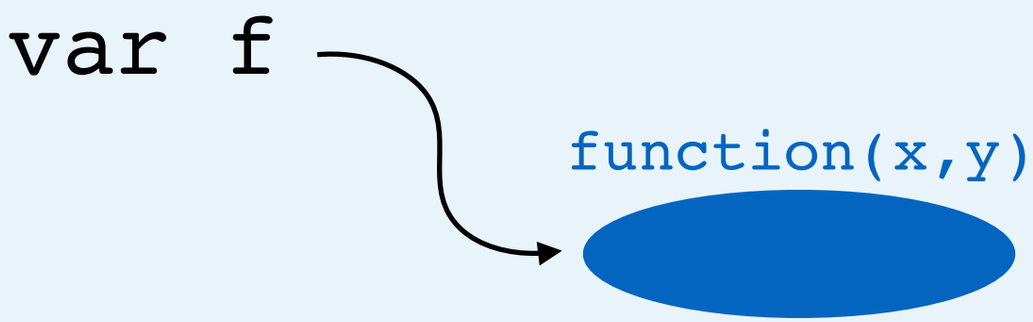
```
var x = 15
var message = "hi"
var f = function (x, y) {
  var result = x + y
  return result
}
```

a. Assignment
    a. Evaluate right side
    b. Create number
    c. Create var x, point to value
b. Assignment
    a. Evaluate right side
    b. Create string
    c. Create var message, point to value
c. Assignment
    a. Evaluate right side
    b. Create function
    c. Create var f, point to value (the function)



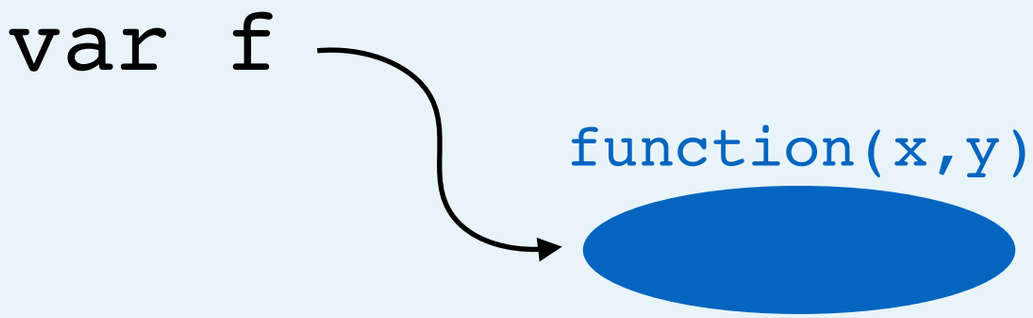
Variables (part 2)

```
var f = function (x, y) {
  var result = x + y
  return result
}
var g = f
```



Variables (part 2)

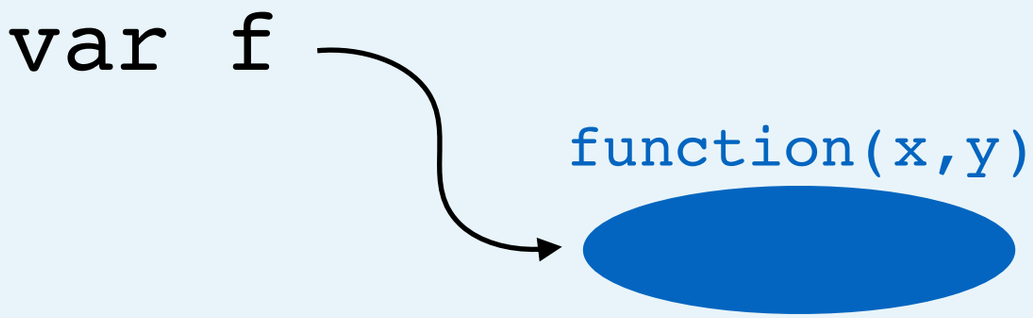
```
var f = function (x, y) {
  var result = x + y
  return result
}
var g = f
```



a. Assignment

Variables (part 2)

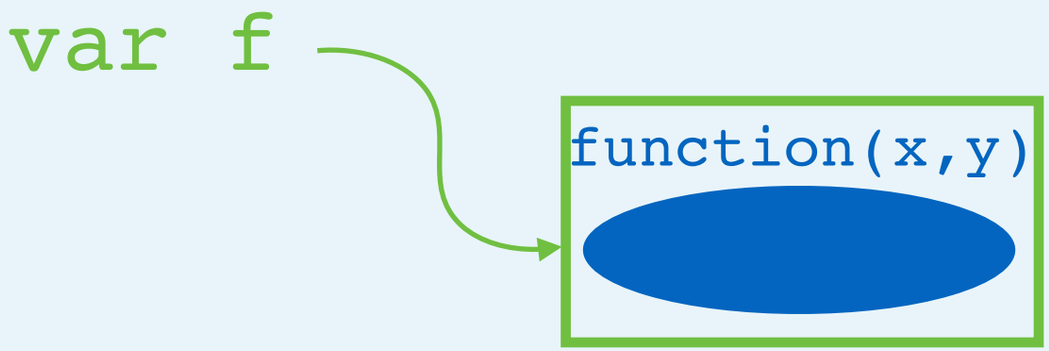
```
var f = function (x, y) {
  var result = x + y
  return result
}
var g = f
```



a. Assignment
    a. Evaluate right side

Variables (part 2)

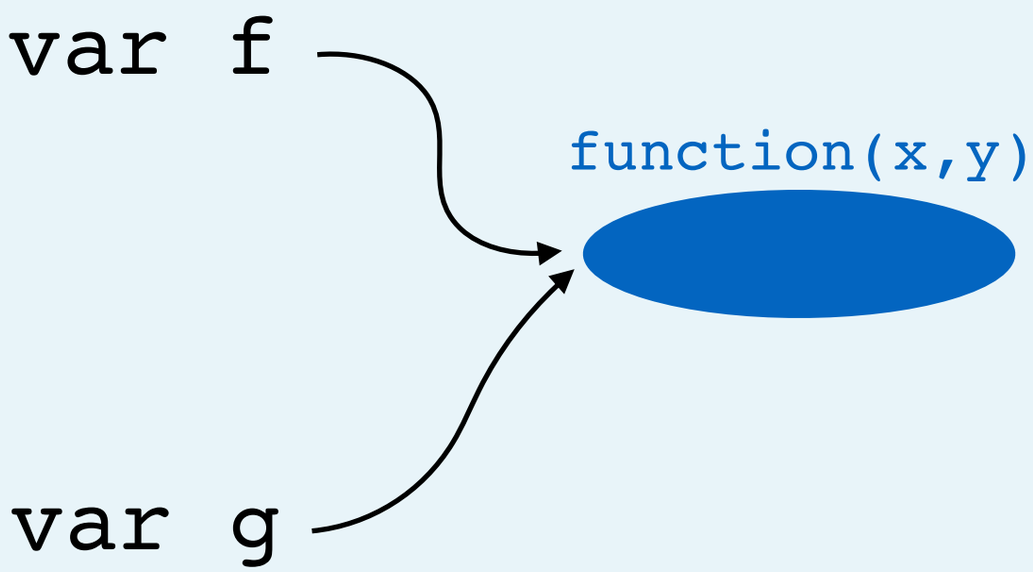
```
var f = function (x, y) {
  var result = x + y
  return result
}
var g = f
```



a. Assignment
    a. Evaluate right side
    b. Look up value of f

Variables (part 2)

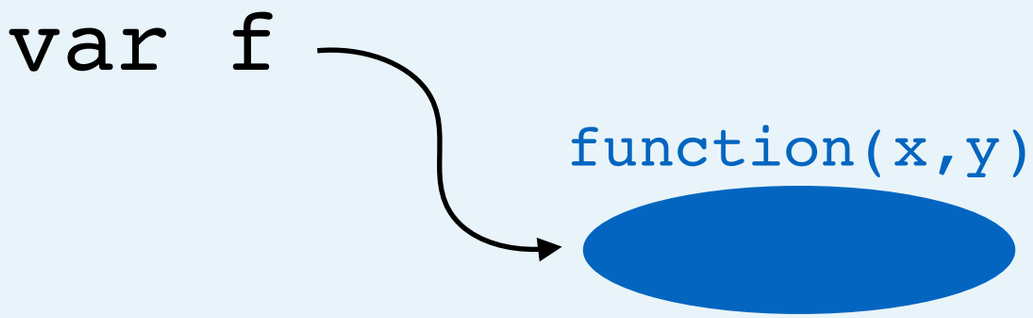
```
var f = function (x, y) {
  var result = x + y
  return result
}
var g = f
```



a. Assignment
    a. Evaluate right side
    b. Look up value of f
    c. Create var g, point to value (the function)

Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```



Function Calls

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var f = function (x, y) {
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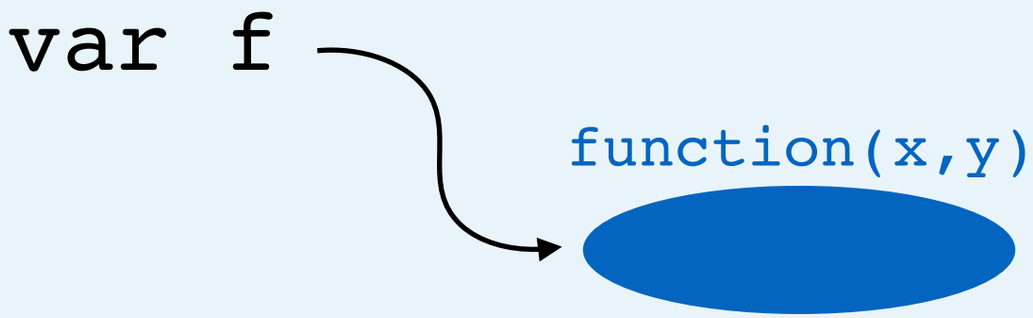
  return result
}
var sum = f(10,20)
```

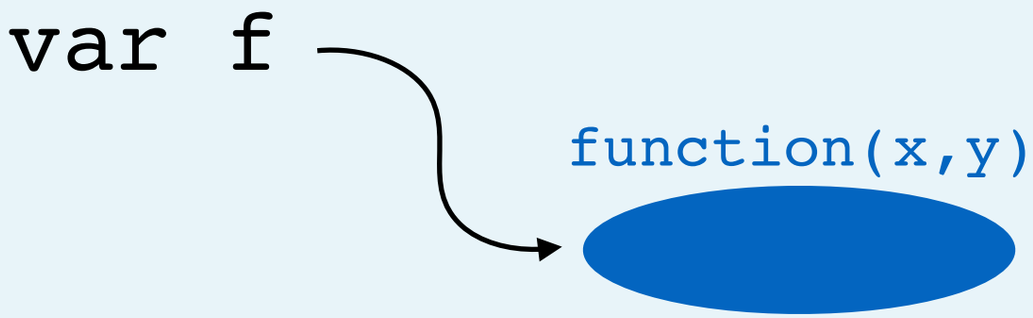
a. Assignment



Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

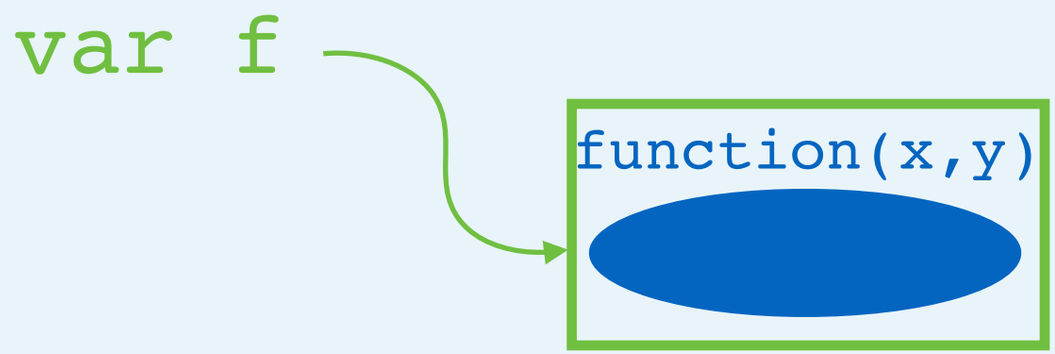
a. Assignment
   a. Evaluate right side



Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

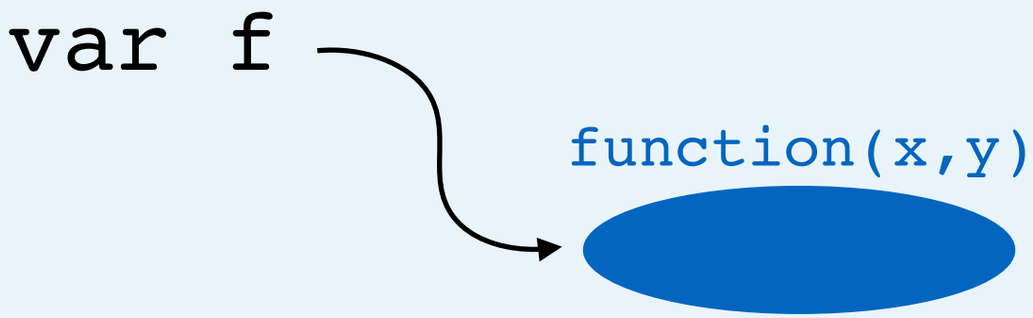
a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)



Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

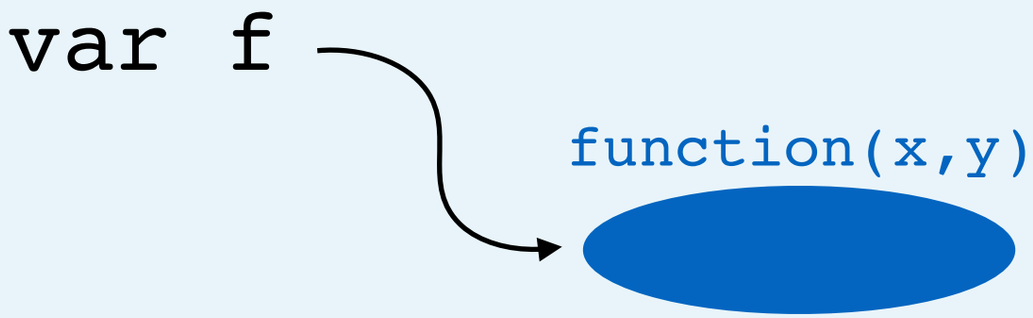
a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)



Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)



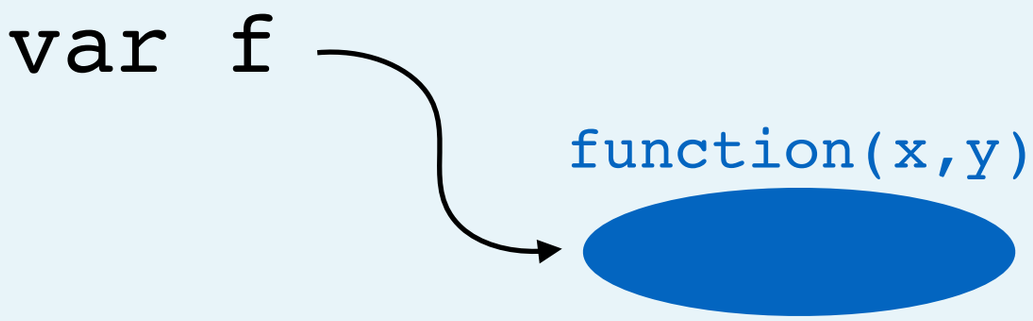
10

20

Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function



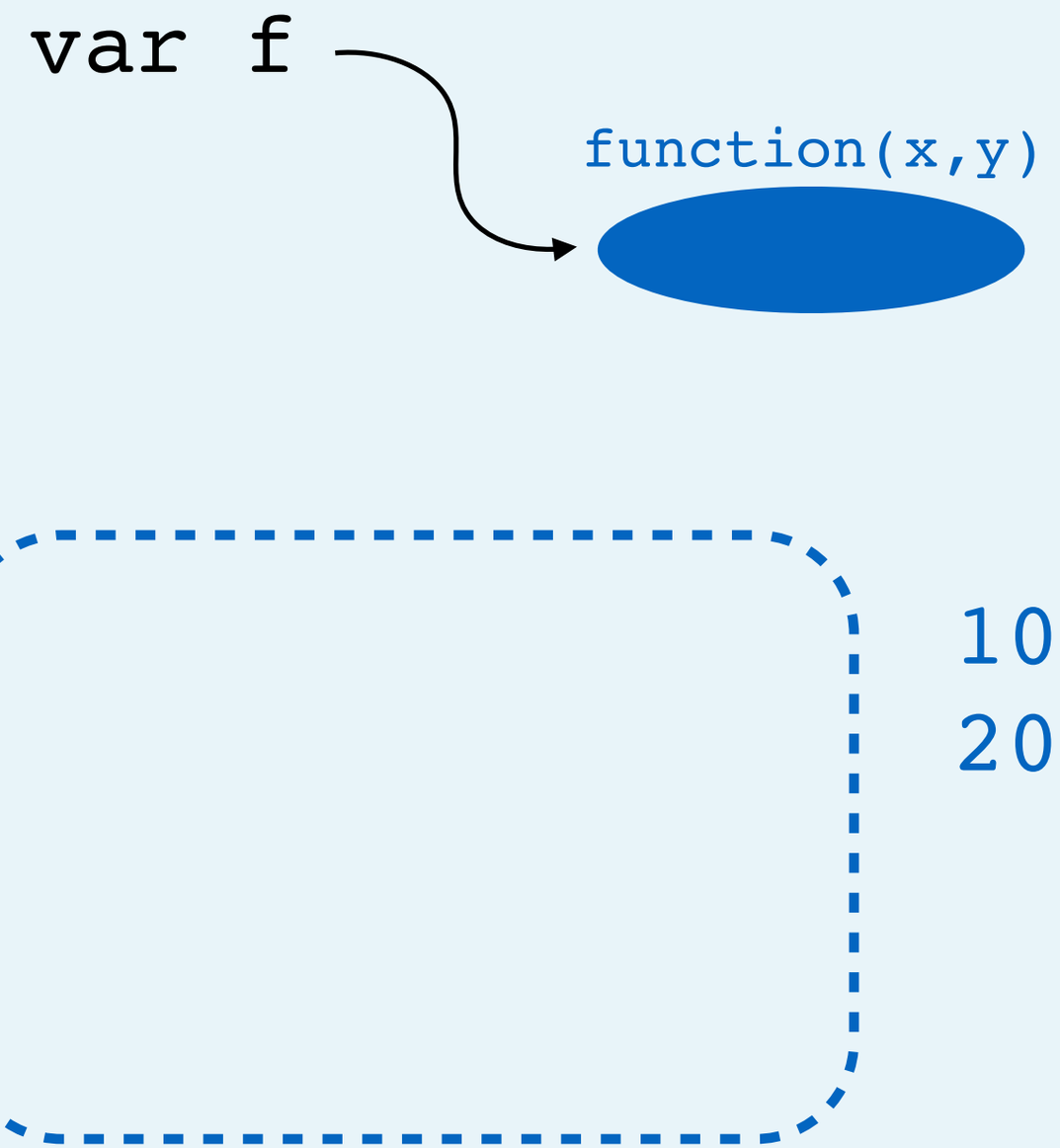
10

20

Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

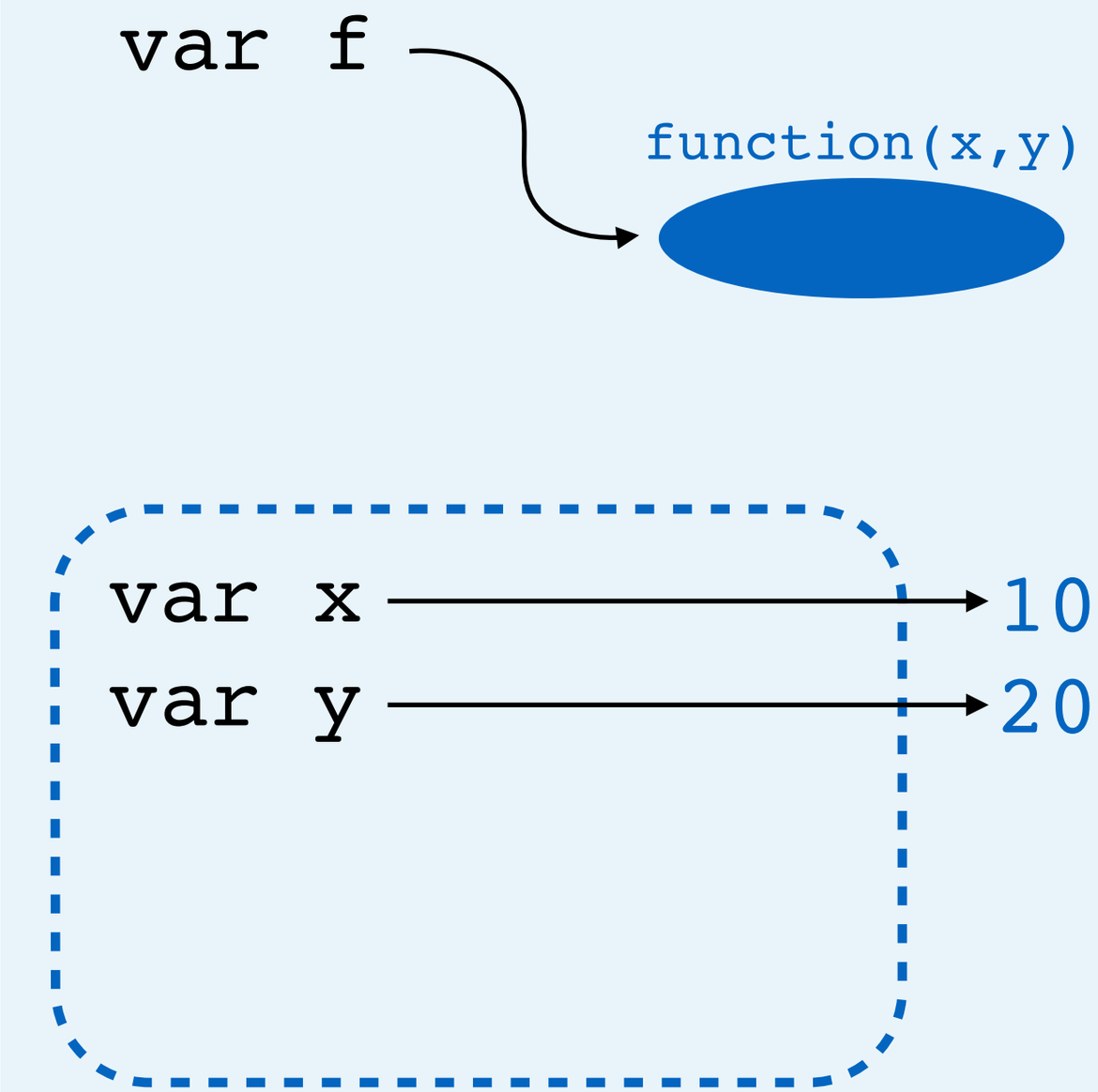
a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope



Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

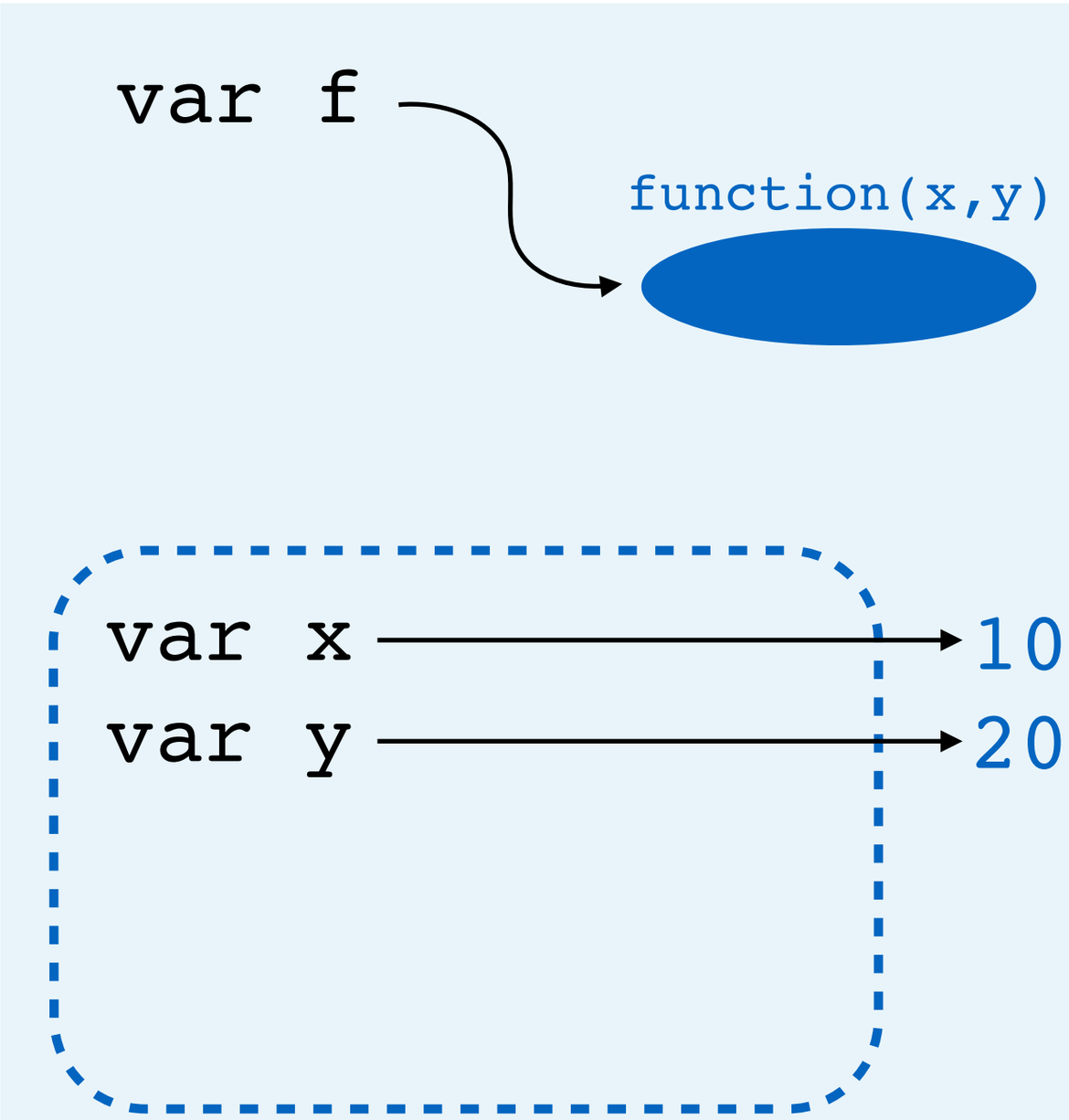
a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters



Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

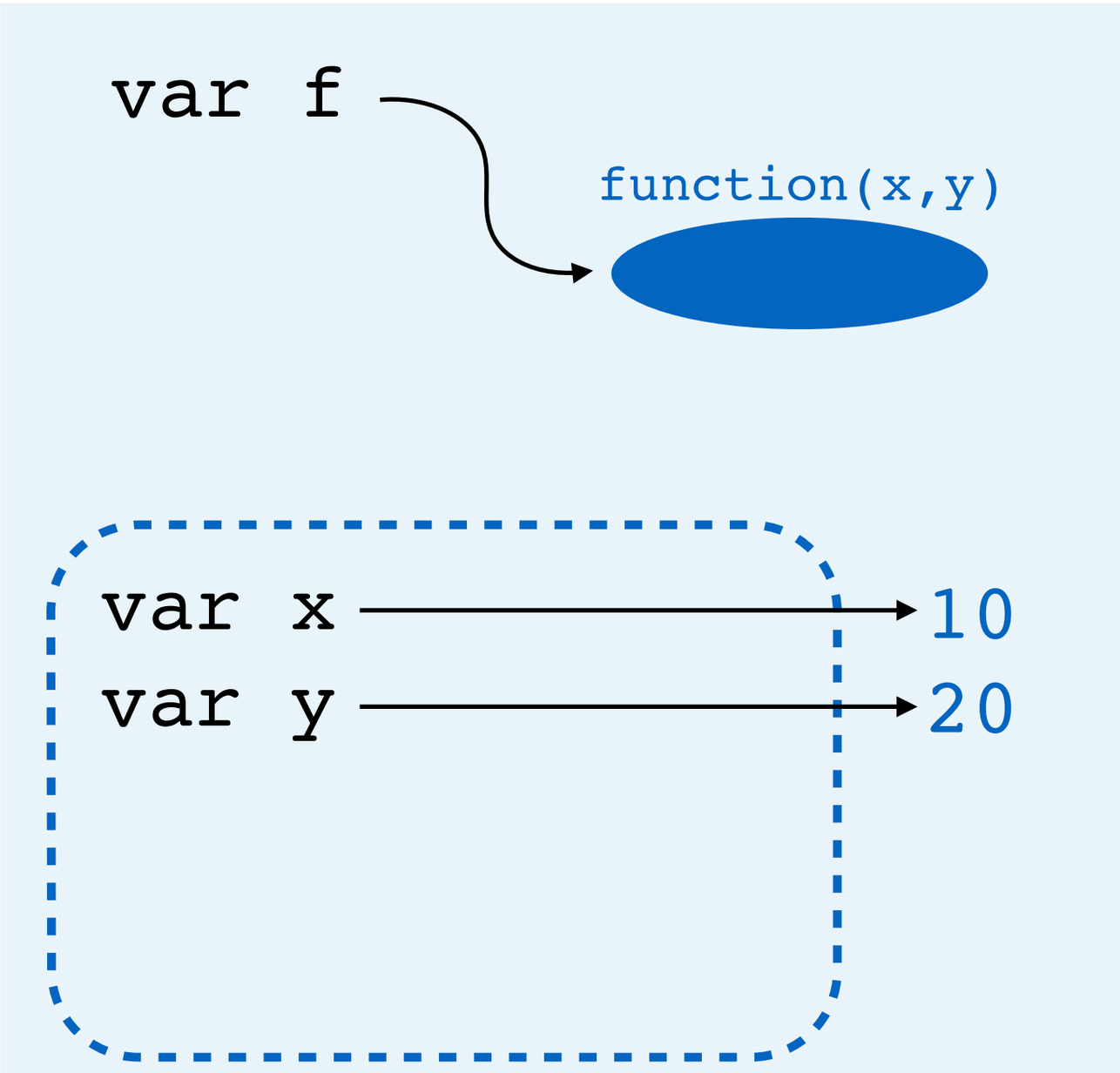
a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters
      c. Assignment



Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

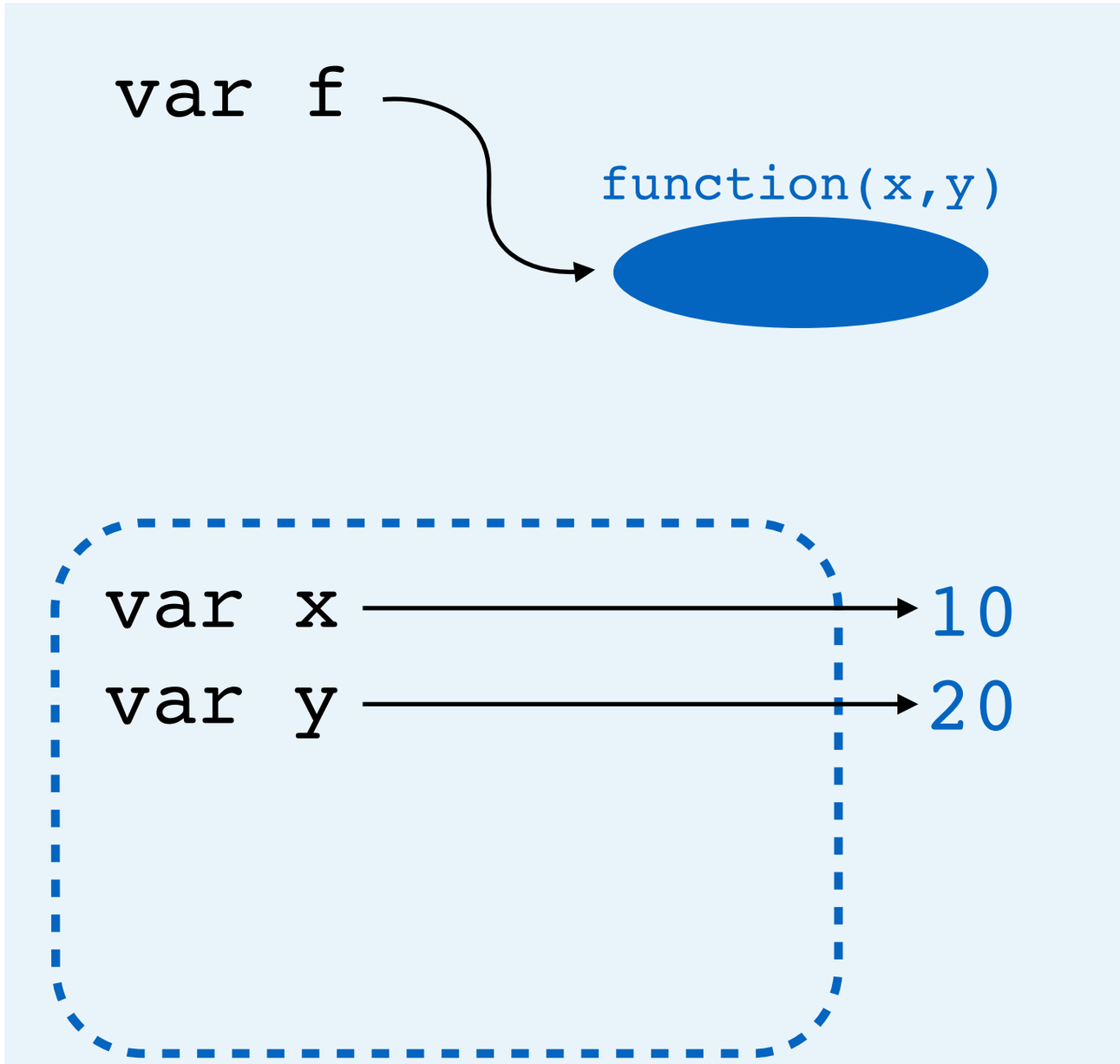
a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters
      c. Assignment
         a. Evaluate right side



Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters
      c. Assignment
         a. Evaluate right side
         b. Binary operation (addition)



Function Calls

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var f = function (x, y) {
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  return result
}
var sum = f(10,20)
```
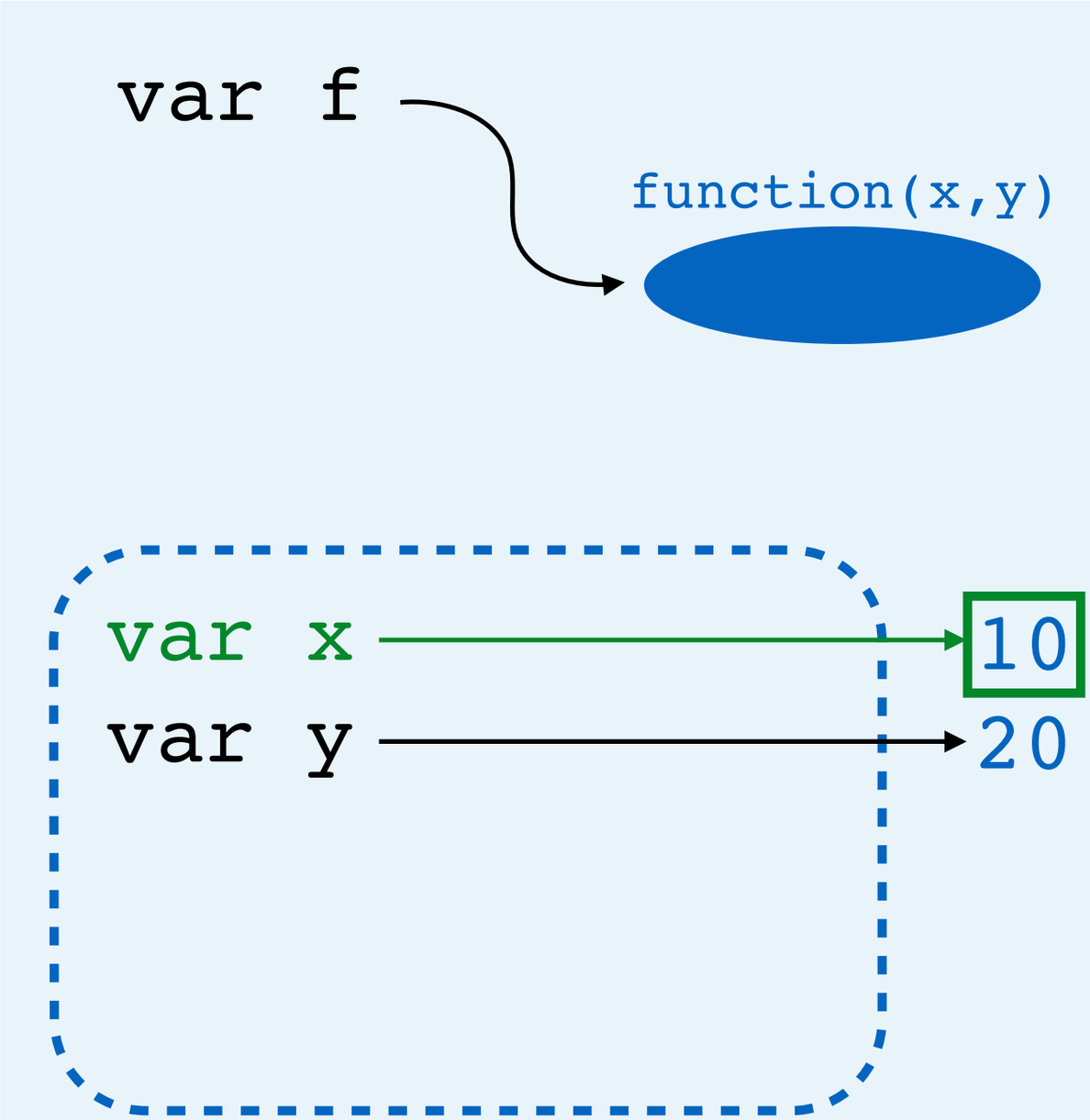

a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters
      c. Assignment
         a. Evaluate right side
         b. Binary operation (addition)
            a. Look up value of x



Function Calls

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var f = function (x, y) {
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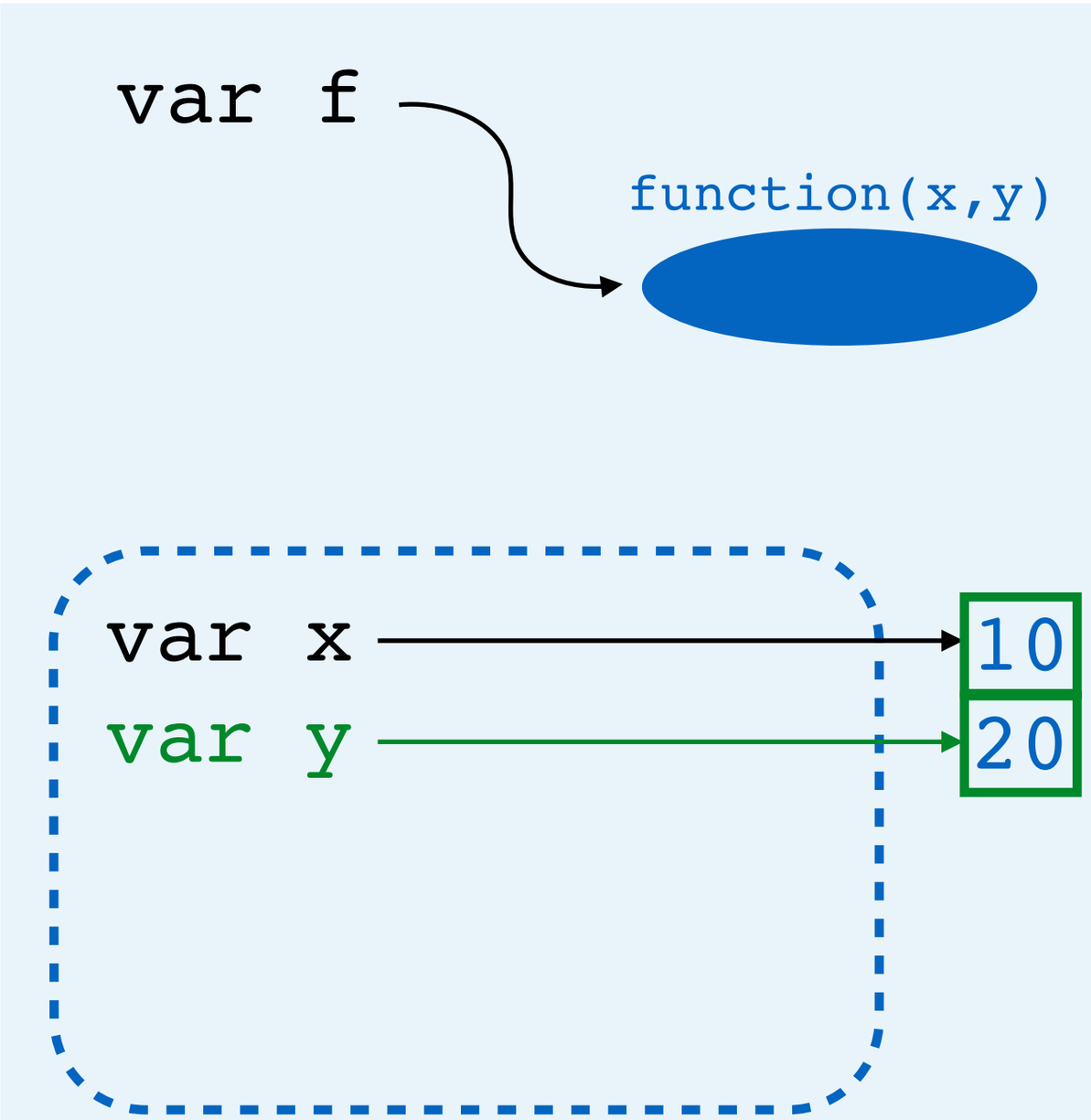
}
var sum = f(10,20)
```

a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters
      c. Assignment
         a. Evaluate right side
         b. Binary operation (addition)
            a. Look up value of x
            b. Look up value of y



Function Calls

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  return result
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```
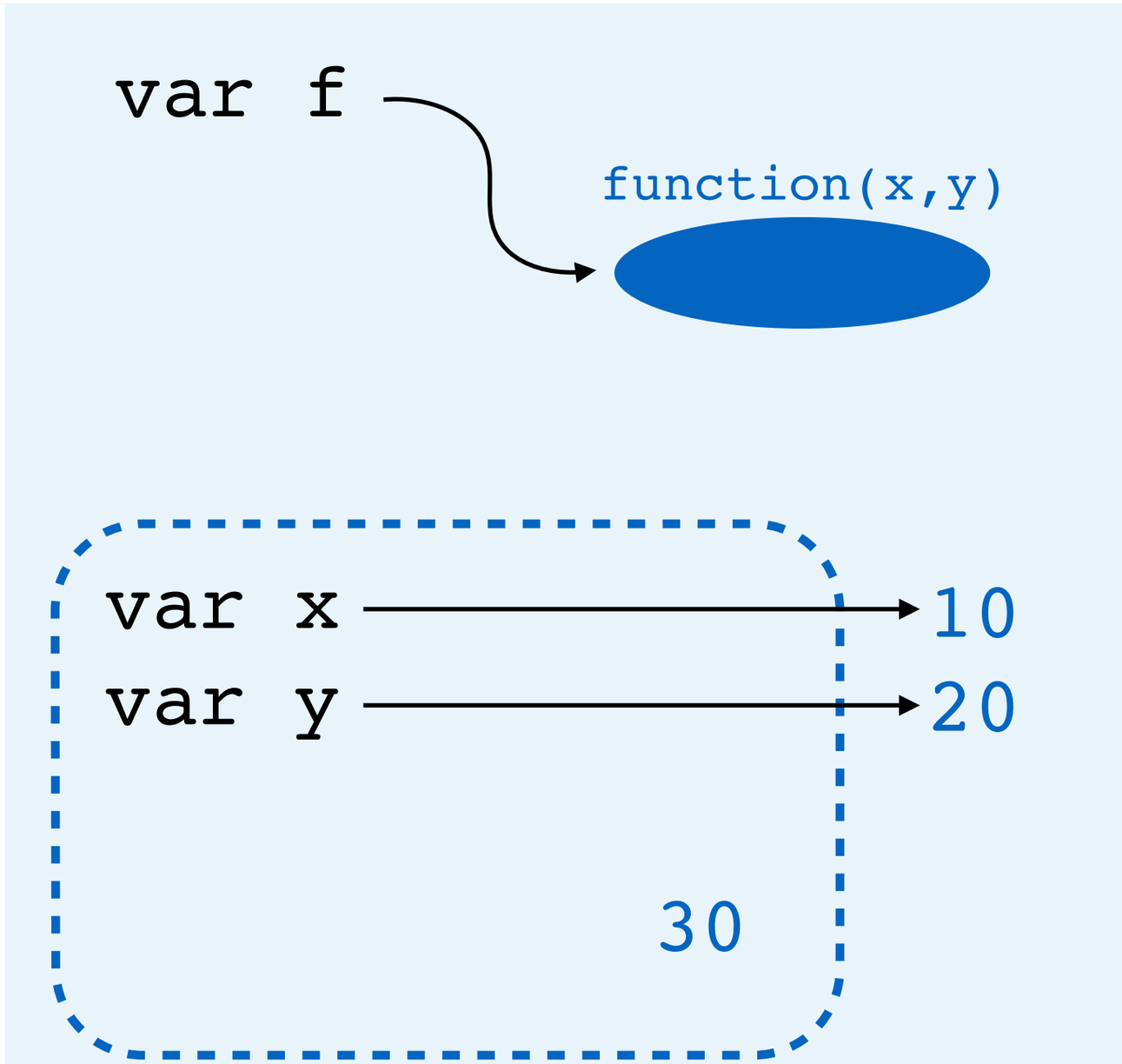
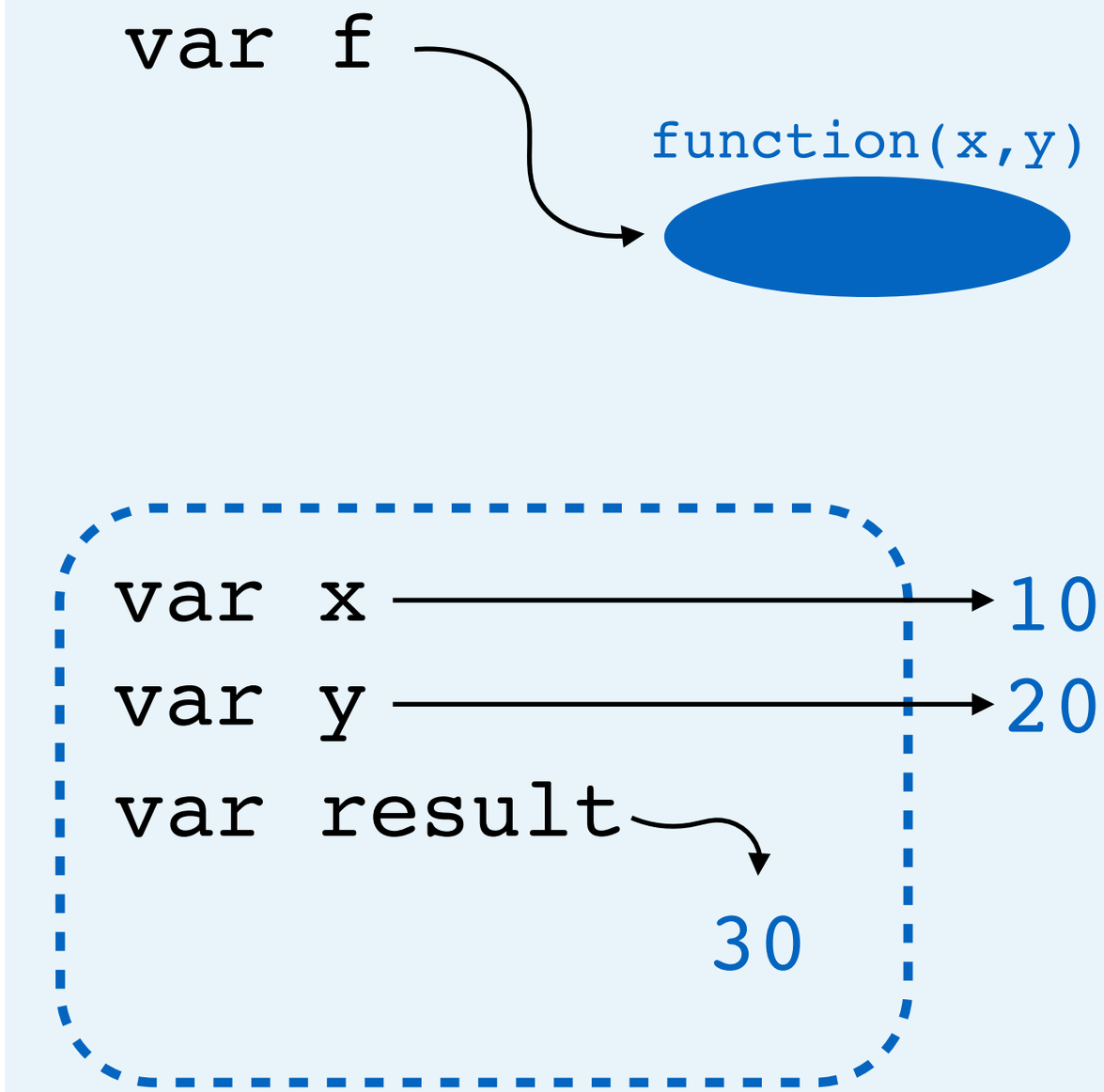

a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters
      c. Assignment
         a. Evaluate right side
         b. Binary operation (addition)
            a. Look up value of x
            b. Look up value of y
            c. Create value



Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters
      c. Assignment
         a. Evaluate right side
         b. Binary operation (addition)
            a. Look up value of x
            b. Look up value of y
            c. Create value
         c. Create var result, point to value



Function Calls

```
var f = function (x, y) {
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  return result
}
var sum = f(10,20)
```
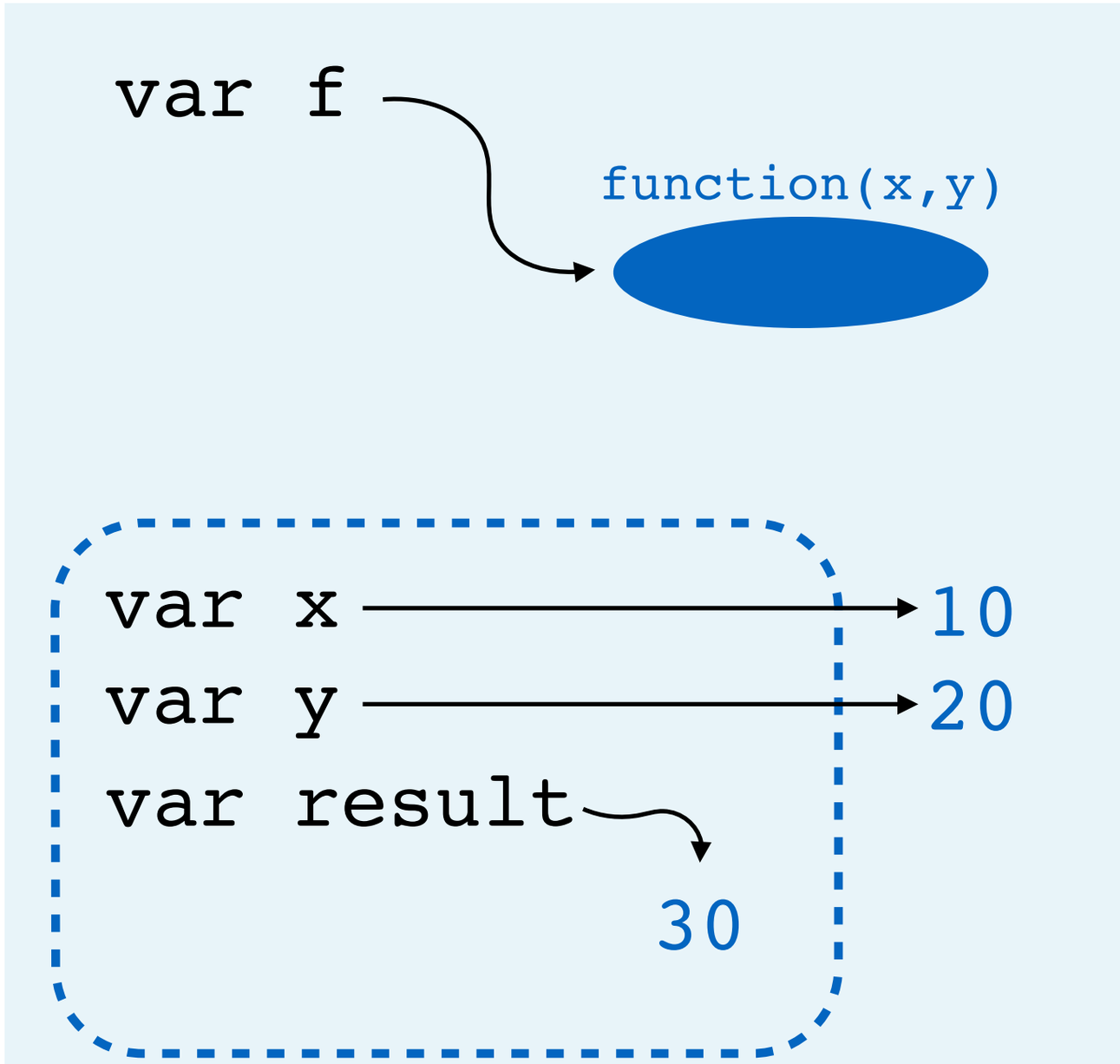
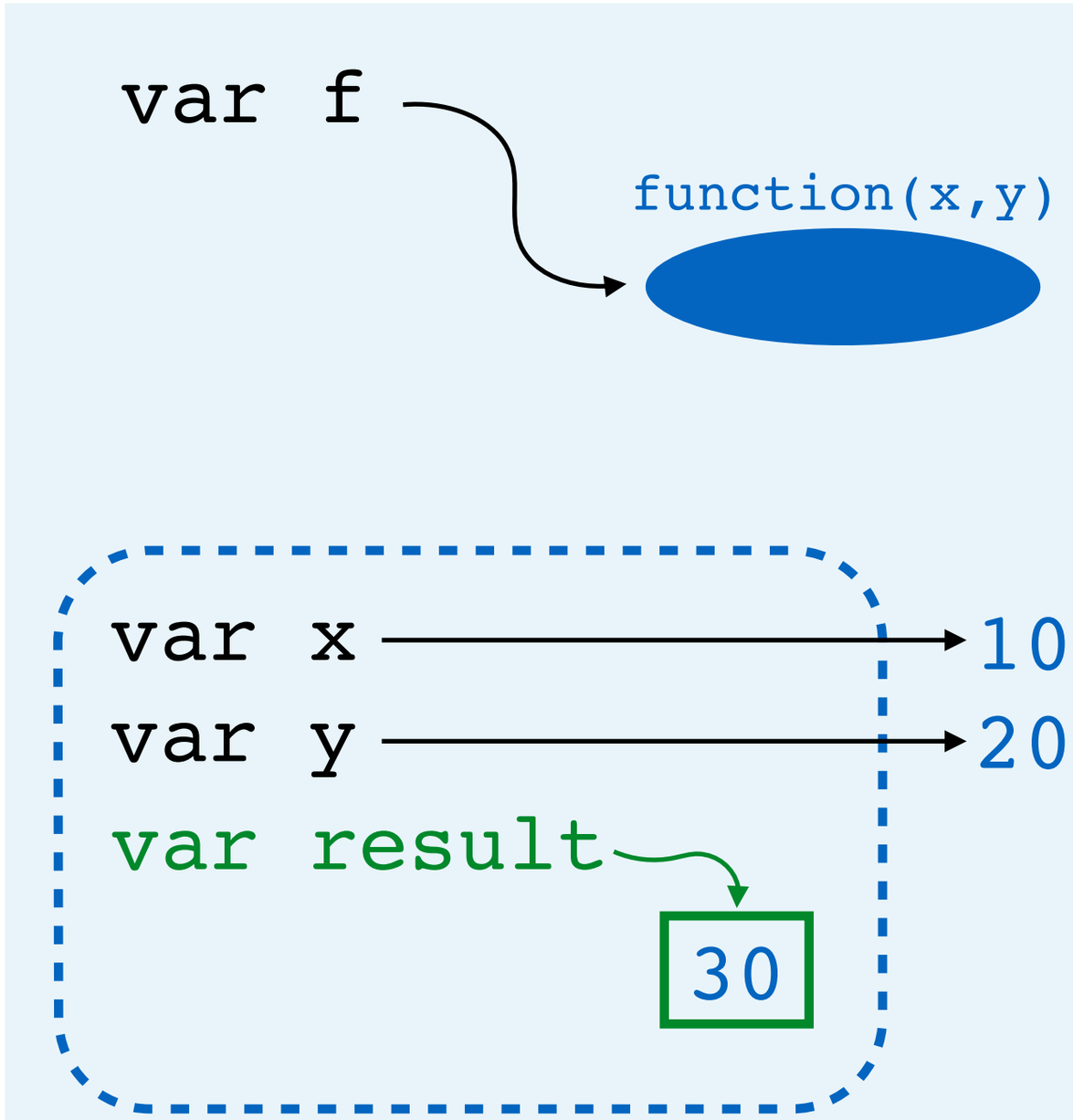

a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters
      c. Assignment
         a. Evaluate right side
         b. Binary operation (addition)
            a. Look up value of x
            b. Look up value of y
            c. Create value
         c. Create var result, point to value
      d. Return statement



Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

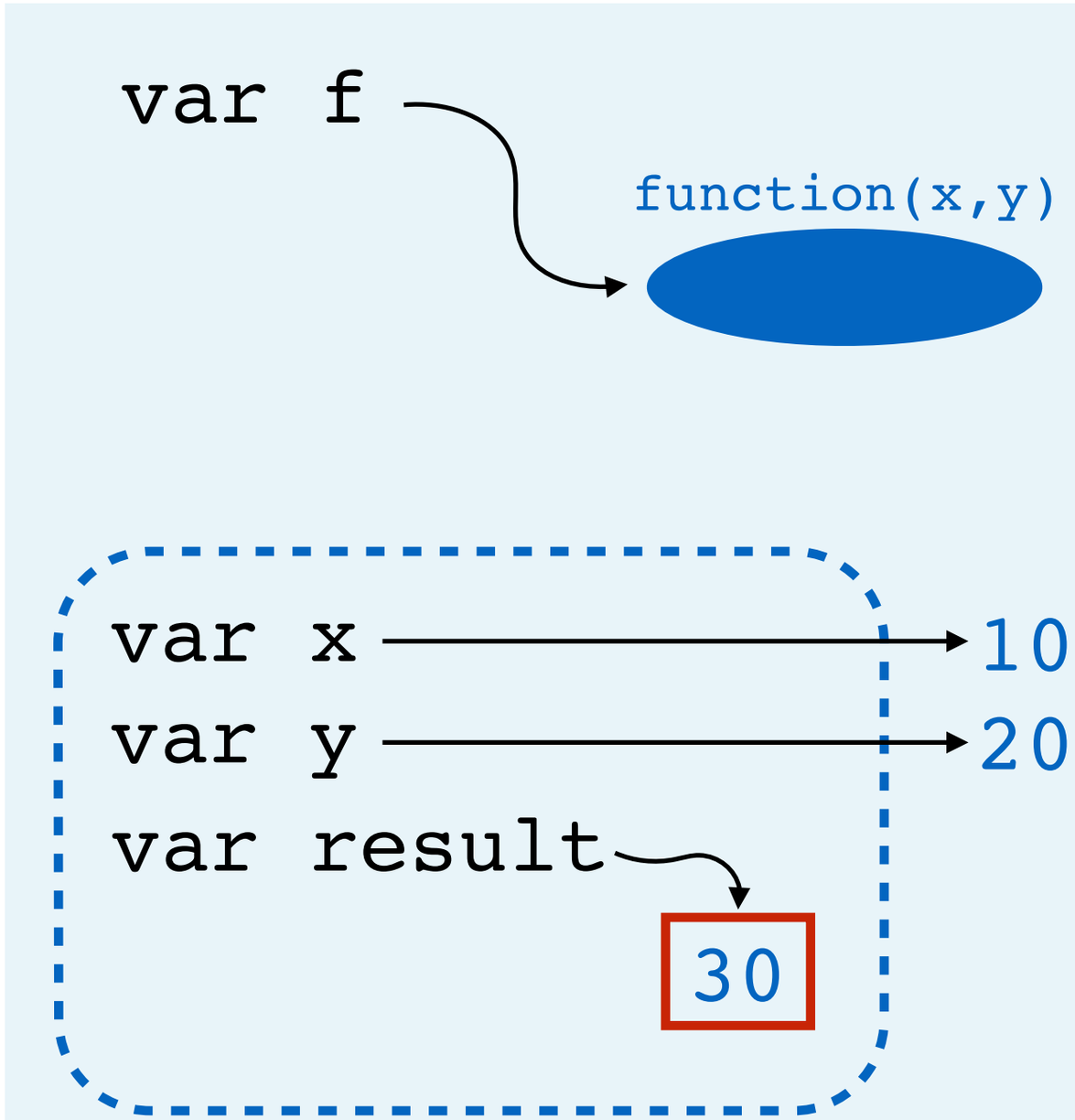
a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters
      c. Assignment
         a. Evaluate right side
         b. Binary operation (addition)
            a. Look up value of x
            b. Look up value of y
            c. Create value
         c. Create var result, point to value
      d. Return statement
            a. Look up value of result



Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

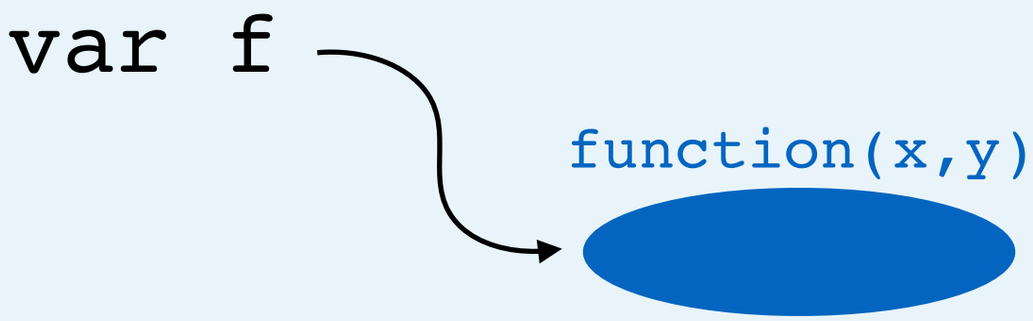
a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters
      c. Assignment
         a. Evaluate right side
         b. Binary operation (addition)
            a. Look up value of x
            b. Look up value of y
            c. Create value
         c. Create var result, point to value
      d. Return statement
            a. Look up value of result
            b. Mark as return value



Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters
      c. Assignment
         a. Evaluate right side
         b. Binary operation (addition)
            a. Look up value of x
            b. Look up value of y
            c. Create value
         c. Create var result, point to value
      d. Return statement
            a. Look up value of result
            b. Mark as return value
      e. Garbage collect scope



30

Function Calls

```
var f = function (x, y) {
  var result = x + y
  return result
}
var sum = f(10,20)
```

a. Assignment
   a. Evaluate right side
   b. Look up value of f (it's a function!)
   c. Create number (resolve argument)
   d. Create number (resolve argument)
   e. Call function
      a. Create scope
      b. Create parameters
      c. Assignment
         a. Evaluate right side
         b. Binary operation (addition)
            a. Look up value of x
            b. Look up value of y
            c. Create value
         c. Create var result, point to value
      d. Return statement
            a. Look up value of result
            b. Mark as return value
      e. Garbage collect scope
   f. Create var sum, point to value