# Specialized Assignment Operators (Shorthands)

# Shortcut Operators

| Standard expression | Equivalent shorthand version |
|---|---|
| varName = varName + <expression>; | varName **+=** <expression>; |
| varName = varName − <expression>; | varName **−=** <expression>; |
| varName = varName * <expression>; | varName ***=** <expression>; |
| varName = varName / <expression>; | varName **/=** <expression>; |
| varName = varName % <expression>; | varName **%=** <expression>; |

## Q: What's the exact output of the following code?

```java
int x = 12;
x /= 12;
System.out.println(x);
```
1

```java
final int MAX = 5;
int x = 12;
x -= MAX;
System.out.println(x);
```
7

# Increment ++ and Decrement Operators --

| Increment by 1 | Decrement by 1 |
|---|---|
| varName = varName + 1; | varName = varName – 1; |
| varName += 1; | varName -= 1; |
| varName++; | varName--; |
| ++varName; | --varName; |

# Prefix (++var or --var)

- Step 1: Increment/Decrement the value of var
- Step 2: Use the updated value of var in the statement

```java
class PrefixDemo {
    public static void main(String[] args) {
        int a = 5;
        System.out.println("a is " + a);
        int b = ++a;
        System.out.println("a is " + a);
        System.out.println("b is " + b);
    }
}
```

```
$ javac PrefixDemo.java
$ java PrefixDemo
a is 5
a is 6
b is 6
```

Equivalent to →

```java
a += 1;
int b = a;
```

# Postfix (var++ or var--)

- Step 1: Use the current value of var in the statement
- Step 2: Increment/Decrement the value of var

```
class PostfixDemo {
    public static void main(String[] args) {
        int a = 5;
        System.out.println("a is " + a);
        int b = a++;
        System.out.println("a is " + a);
        System.out.println("b is " + b);
    }
}
```

```
$ javac PostfixDemo.java
$ java PostfixDemo
a is 5
a is 6
b is 5
```

Equivalent to →

```
int b = a;
a += 1;
```

Q: What's the exact output of the following code?

```java
int a = 2;
int b = 2 * (++a);
System.out.println("a is " + a);
System.out.println("b is " + b);
```

a is 3
b is 6

```java
int a = 2;
int b = 2 * (a++);
System.out.println("a is " + a);
System.out.println("b is " + b);
```

a is 3
b is 4