Code example

```
var x = readline();  // introduces new variable x and saves command
                     // line input in x using readline()
if (x == 10)
{
      print("x is " + x);  // "x is " is treated as a string; x
                          // represents the value stored in x
}
```

We will use a **plain text editor** (such as Notepad++ for Windows or TextWrangler for Mac, *not Microsoft Word*) where we just type in letters without any bold or italics formatting.

Example: Calculate the final sale price of an item if there is a 40% off sale.

```
// prints message to the screen
print("What is the price of your item?");

// saves user input into the variable price
var price = readline();

// using % results in a syntax error; use decimals instead of percents
var finalPrice = price * 0.6;

// prints the result
print("The sale price is: " + finalPrice);
```

Alternatively, we could have coded this as …

```
var discount   = price * 0.4;
var finalPrice = price - discount;
```

Error messages appear in the format filename: line number, column number, type of error

- *Syntax errors* mean the program didn't understand what you wrote – what you wrote isn't in the JavaScript language

The computer outputs long decimal answers that are its approximation of the result. They can be formatted – this will be covered in the future.

Example: Calculate the final sale price of an item if there is a 40% off sale for items more than $10. The sale only applies if the item costs more than $10 (so it excludes $10 itself.)

```
var price = readline();
var discount = 0;
if (price > 10)  // no semicolon for conditional statements
{
      discount = price * 0.4;
}
var finalPrice = price - discount;
print("The sale price is " + finalPrice);
```

Alternatively, we could have coded this as …

```
if (price > 10)
{
      price = price * 0.6;
}
print("The sale price is " + price);
```

Make sure to test a variety of inputs to confirm that your program works!

Variable example

```
var a = 10;    // a is set to 10
a = a + 5;     // a = 15
a = a / 3;     // a = 15 / 3 = 5
a = a * 10;    // a = 50
if (a > 20)
{
      a = a - 20;  // a = 30
}
```

Conditional + Boolean + variable: use >, <, ==, != (not equal)

Else statements are additional blocks that are executed if the if statement is not true.

Example: Calculate the final sale price of an item if there is a 40% off sale for items more than $10 and 60% off sale for items more than $20.

```
print("What is the price of your item?");
var price = readline();
if (price > 10)
{
      discount = price * 0.4;
}
if (price > 20)
{
      discount = price * 0.6;
}
var finalPrice = price - discount;
print("The sale price is " + finalPrice);
```

The above code works, but will break if you switch the order of the if statements! By switching the order, prices above 20 will first receive the 60% discount, but that discount will get overridden by the 40% discount of items over $10. Instead, a better way to code this is below:

```
if (price > 20)
{
      discount = price * 0.6;
}
else
{
      if (price > 10)
      {
            discount = price * 0.4;
      }
}
```

While loop is the JavaScript loop structure that resembles the "repeat until" block in Scratch.

```
while ( … ) // runs until the enclosed conditional is not true
```

Another example: Allow a user to enter the prices of any number of items, up until the user enters an item of value $0.

```
print("Enter the values of your items:");
var total = 0;
var item = readline();          // readline() treats inputs as strings,
                                // not numbers, so…
total = total + (item * 1);     // if you are sure your input is a
                                // number, multiply it by 1 to convert

while (item != 0)        // keep repeating this until the item cost = 0
{
      item = readline();
      total = total + (item * 1);   // "+ item" will end up adding
                                    // strings together, not numbers!
}
print("Total price: " + total);
```

Since you can only multiply numbers, if you have something that you know is a number but is treated like a string (like the result of a readline()), you can just multiply it by 1 to force it to be a number.