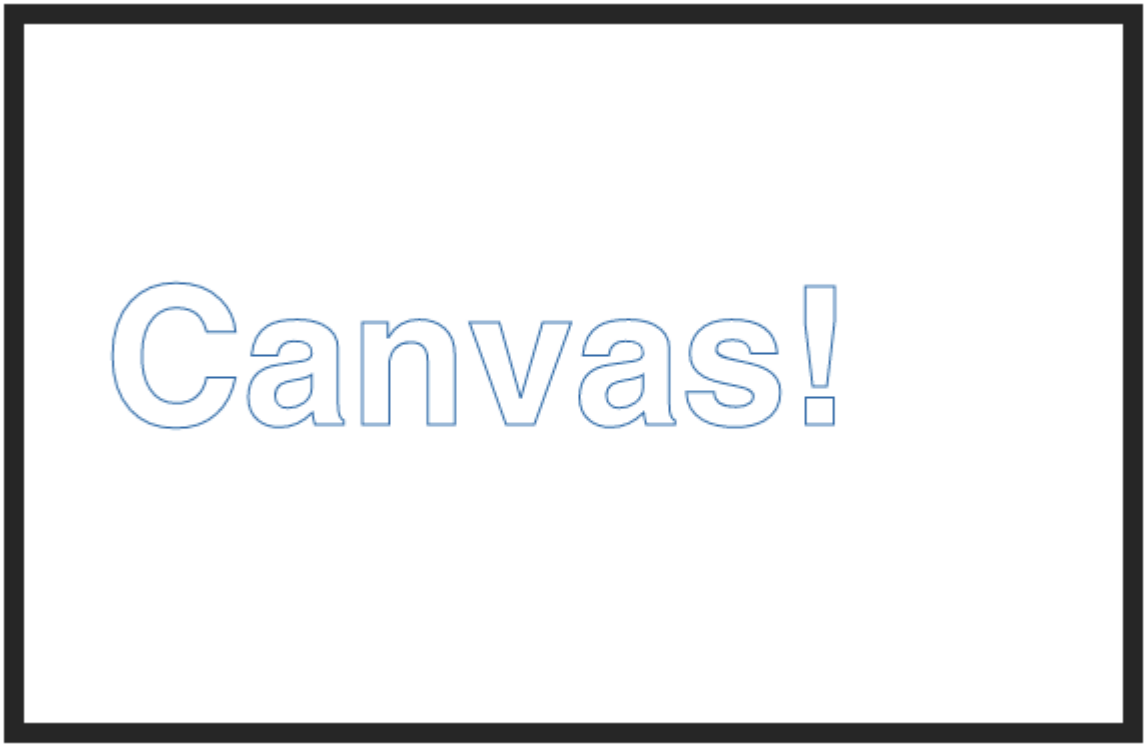
From Text to Pixels

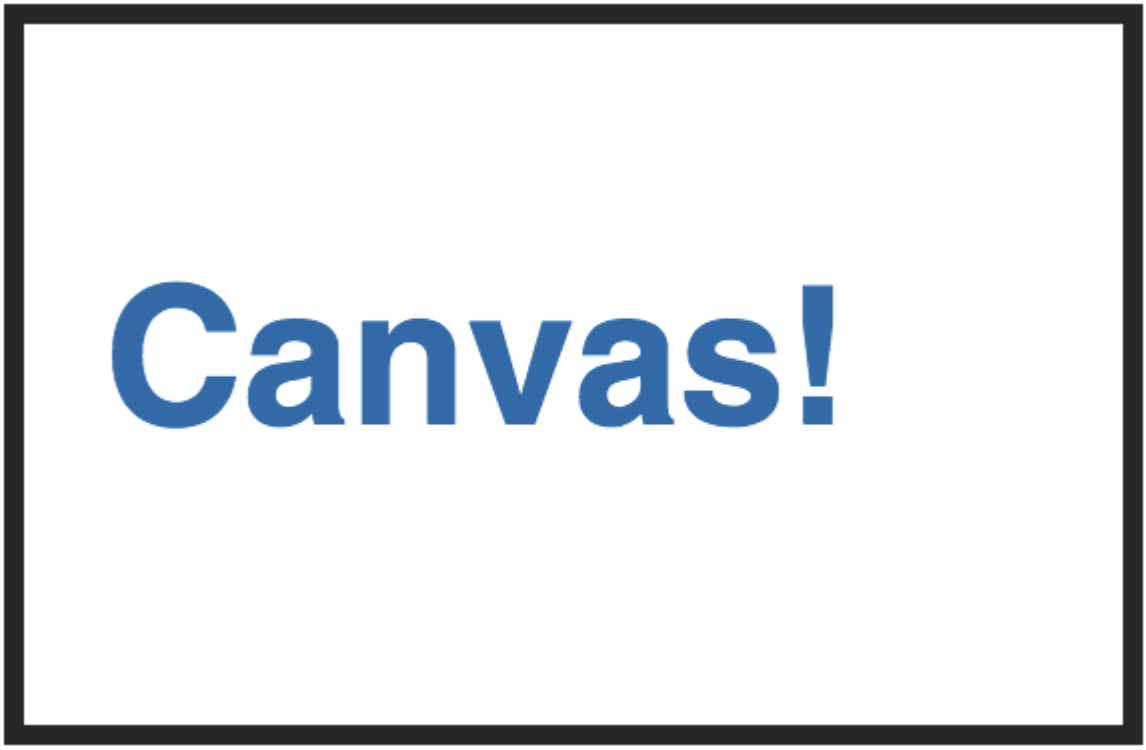
WE'LL COVER THE FOLLOWING

For getting text to appear in our `canvas`, we will primarily be using two methods: `strokeText` and `fillText`.

With the `strokeText` method, you end up drawing an outline of your text:



The `fillText` method allows you to display a solid / filled-in version of your text instead:



Now that you know this, let's wrap up this awkward introduction and get our hands dirty with some code!

To do this, take sure you have an HTML document with a `canvas` element locked and loaded. If you don't have such a document, just create a new one with the following markup:

HTML

```html
<!DOCTYPE html>
<html>
<head>
  <title>Canvas Text Example</title>
  <style>
    canvas {
      border: #333 10px solid;
    }
  </style>
</head>

<body>
  <canvas id="myCanvas" width="550px" height="350px"></canvas>

  <script>

  </script>
```

```
18
19  </body>
20
21  </html>
22
```

output

All this sample does is give you a 550px by 350px `canvas` element that we will use in the next couple of sections to get our text to appear.

Using strokeText and fillText

Let's turn all of the English words in the previous section into some sweet code that showcases what `strokeText` and `fillText` have to offer. Now, the way you use both of these methods is nearly identical:

```
context.fillText("my text", xPosition, yPosition);
context.strokeText("my text", xPosition, yPosition);
```

You call them on your drawing context object, and you pass in three arguments:

1. The text you would like to display

2. The horizontal (x) position

3. The vertical (y) position

There is an optional fourth argument you can specify for setting the maximum width of your text, but that's not something you will use often. Just keep this knowledge under your hat for that rare rainy day when you'll need it.

Getting back to our original plan, let's add some code. Inside our `script` tag, go ahead and add the following lines:

```
var canvas = document.querySelector("#myCanvas");
var context = canvas.getContext("2d");

context.fillText("Canvas!", 40, 125);
context.strokeText("Canvas!", 40, 275);
```

The first two lines are the standard ones you have for getting at your `canvas` element's 2d drawing context! The interesting stuff happens with our `fillText` and `strokeText` lines:

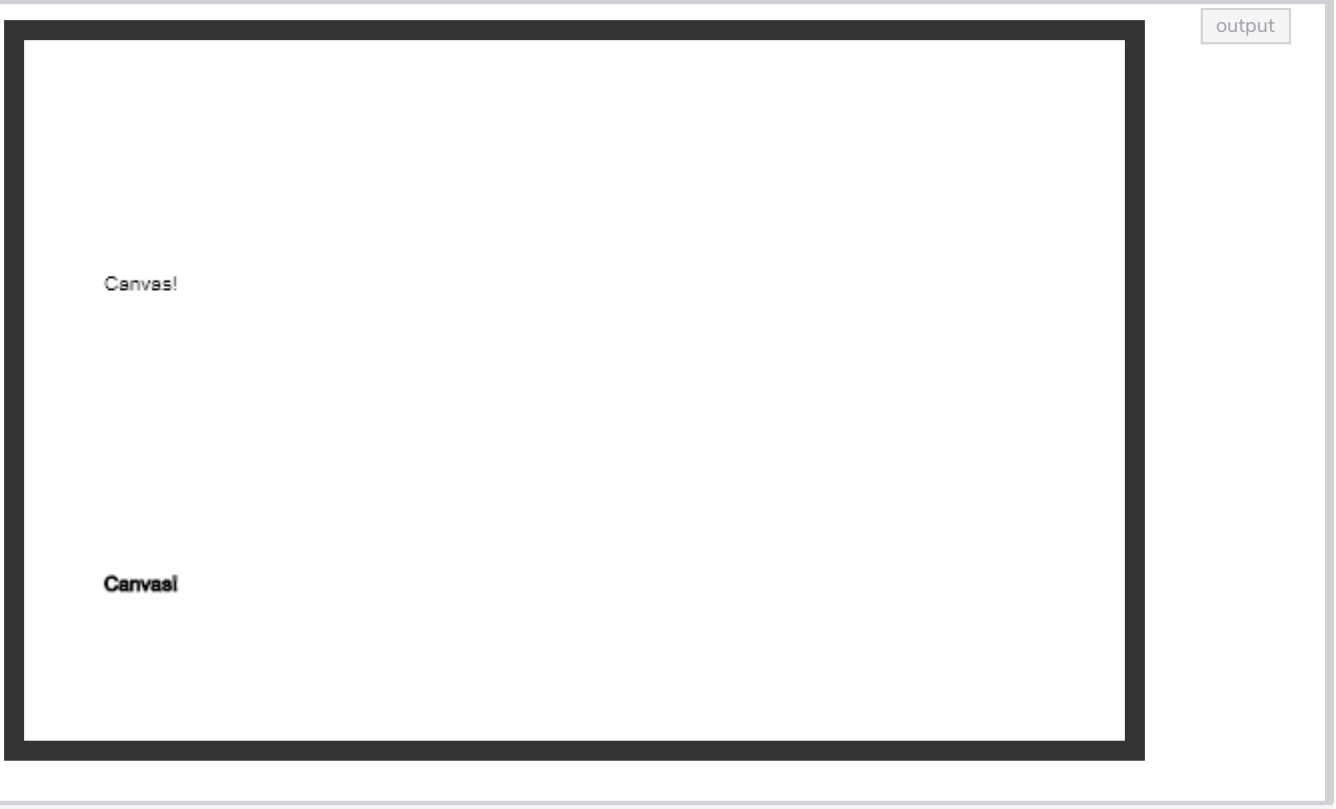
```
context.fillText("Canvas!", 40, 125);
context.strokeText("Canvas!", 40, 275)
```

In these two lines, we are telling JavaScript to draw a solidly-filled version of the **Canvas!** text at (40, 125) and an outline version of the **Canvas!** text at (40, 275). If you preview what you have in your browser, you'll see something that looks as follows:

HTML JavaScript

```
1  var canvas = document.querySelector("#myCanvas");
2  var context = canvas.getContext("2d");
3
4  context.fillText("Canvas!", 40, 125);
5  context.strokeText("Canvas!", 40, 275);
```

javascript



You did not make a mistake. That is what our text looks like by default when we don't specify any appearance details. We'll fix that right up in the next section.

Changing How Your Text Looks

Our `canvas`-bound text isn't destined to look like whatever hideous thing we have showing right now. **By default, your text shows up in a sans-serif font sized at 10 pixels**. Yikes! Fortunately, you have a handful of properties that help you to transform our almost unreadable text into something more appealing. The main awesome property for this is `font`, but you also have the lesser `textAlign`, `textBaseLine`, and `direction` properties that you can use as well. We'll look at all of these properties in the next handful of sections.

Changing the Font

Not to play favorites here, but the most frequently-used property you'll use for adjusting your text's appearance is the `font` property. This property mimics the quite complex CSS-equivalent property of the same name where you can specify all sorts of values to adjust how your text appears.

Instead of overwhelming you with everything the `font` property does, lets look at a few simple (and very common) cases where we just specify the font size and a font family with an optional **bold** or *italic* modifier.

Here is us setting the `font` property to display some 96 pixel-sized text in Helvetica, Arial, or sans-serif:

```
context.font = "96px Helvetica, Arial, sans-serif";
```

You can even add a **bold** or **italic** modifier to have the text appear bolded or italicized:

```
context.font = "bold 96px Helvetica, Arial, sans-serif";
```

Let's use this in our example to make our text more legible. Take the above line of code and add it just before the call to `fillText` and `strokeText` as shown below:

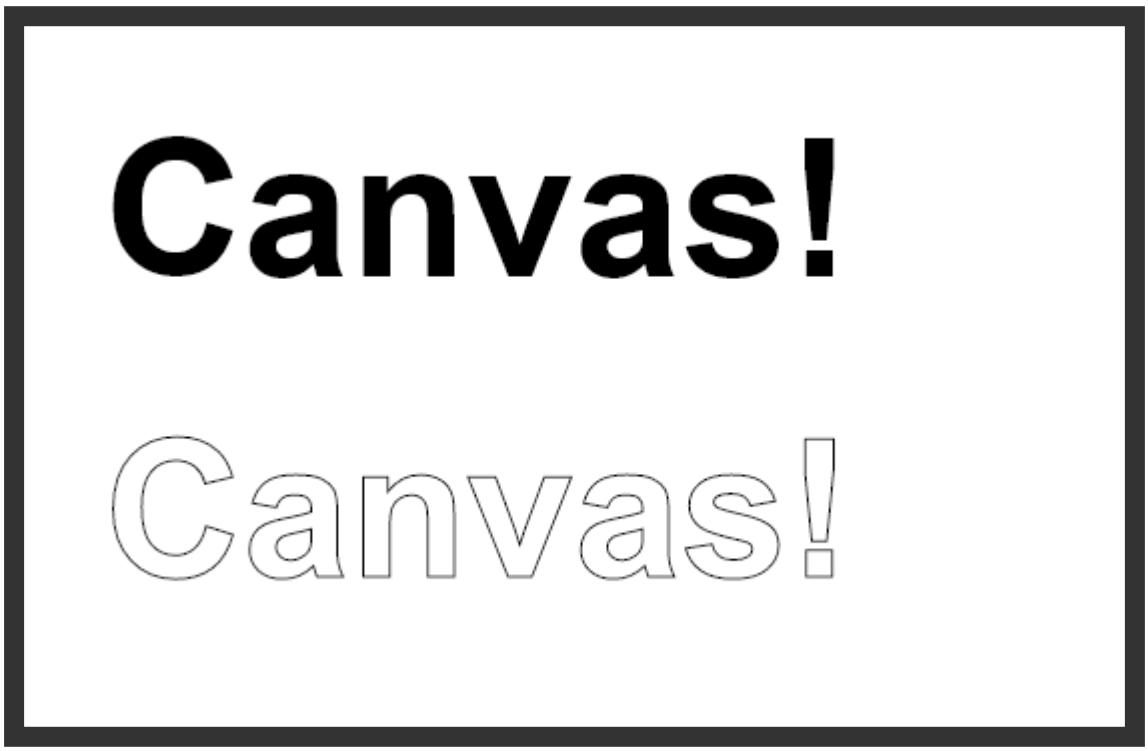
HTML JavaScript

javascript

```
var canvas = document.querySelector("#myCanvas");
var context = canvas.getContext("2d");

context.font = "bold 96px Helvetica, Arial, sans-serif";
context.fillText("Canvas!", 40, 125);
context.strokeText("Canvas!", 40, 275);
```

output



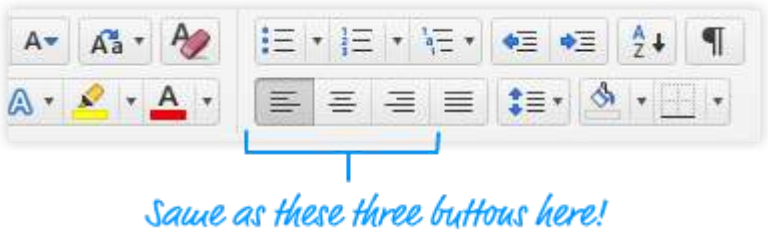
Doesn't this look much nicer? If you want greater customization of your font, you can specify any of the values that go to the `font` shorthand property:

```
context.font = "[style] [variant] [weight] [size]/[line height] [font family]";
```

For examples and more details on how to use the `font` property beyond the two common cases we looked at, head on over to MDN's amazing coverage of this.

Changing Text Alignment

Something you might do every now and then is specify whether your text alignment is **left**, **center**, or **right** using the `textAlign` property. The behavior of the `textAlign` property is identical to what you might see when aligning text in a word editor:



Getting back to JavaScript, here is an example of me setting the text alignment to be centered, for example:

```
context.textAlign = "center";
```

In addition, you can also specify a value of **start** or **end**. You may be wondering what makes **start** and **end** different from **left** and **right**? For those of us who are used to reading text in a left-to-right direction, there is no difference. For those of us who read text right-to-left, the "correct" thing happens when you use **start** and **end** as opposed to **left** and **right**. The default value if you don't specify anything for the `textAlign` property is **start**.

Changing Text Direction

Since we just talked about this, you can force your text direction to be **ltr** (left

Since we just talked about this, you can force your text direction to be **ltr** (left-to-right) or **rtl** (right-to-left). Below is an example of me forcing my text to

appear in right-to-left mode:

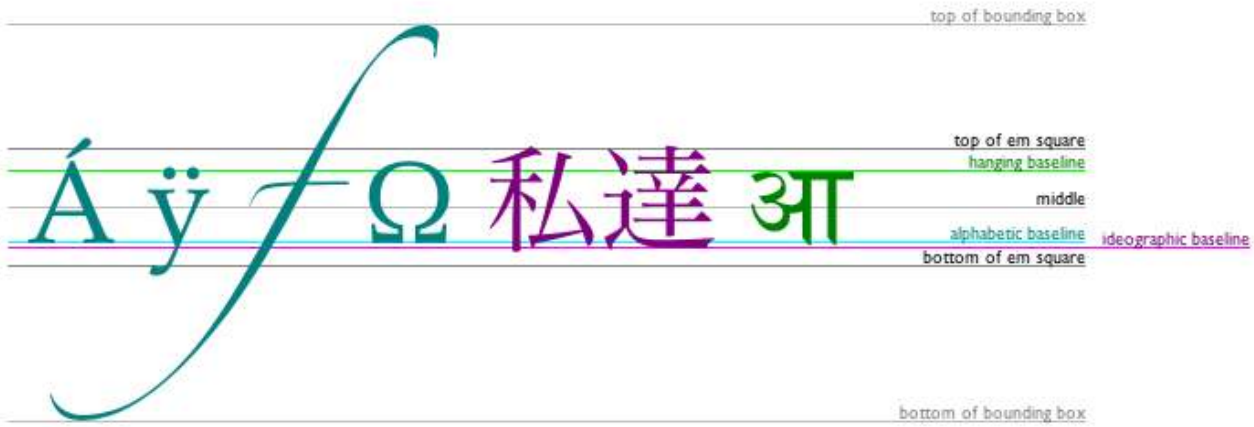
```
context.direction = "rtl";
```

If you wish to respect your browser's (or your page's) default setting, you can specify a value of **inherit**. The **inherit** value also happens to the default value for `direction`, so unless you really care about setting **ltr** or **rtl** as the value, you don't have to ever set this property.

Setting the Baseline

The last text-related property we will look at is `textBaseline`, and it defines the baseline alignment your characters will appear in. This is a very simple way of describing something a bit complex. Your text can appear vertically aligned across several values defined by your font. These values are **top, hanging, middle, alphabetic, ideographic**, and **bottom**.

The WHATWG team has created a really nice visualization of what these alignment values look like:



To set any of these values, call the `textBaseline` property and pass in the alignment value you want:

```
context.textBaseline = "top";
```

The default value is **alphabetic**. I've never had to set this property, and (if you

are lucky!) there is a good chance you never will have to either.

Changing the Text Color

The last thing we are going to look at is how to change our text's color. Right now, our text is colored black. To change the color of our text, we are going to use the familiar `strokeStyle` and `fillStyle` properties that we've seen a few times for setting the colors of our shapes. When you think of our text as nothing more than lines and shapes, it makes sense why these properties make an appearance!

To change the color of text created by `fillText`, use the `fillStyle` property. Similarly, to change the color of text created by strokeText, use the `strokeStyle` property:

HTML JavaScript

javascript

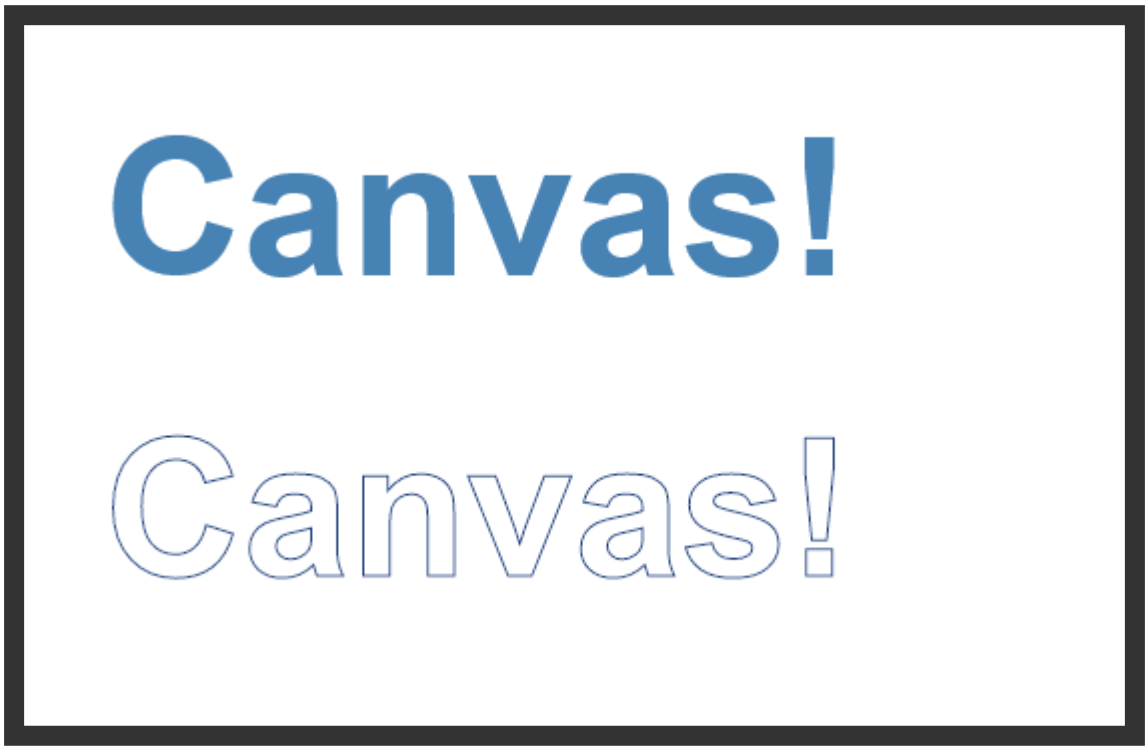
```
var canvas = document.querySelector("#myCanvas");
var context = canvas.getContext("2d");

context.font = "bold 96px Helvetica, Arial, sans-serif";

context.fillStyle = "steelblue";
context.fillText("Canvas!", 40, 125);

context.strokeStyle = "#173b79";
context.strokeText("Canvas!", 40, 275);
```

output



You can specify any valid CSS color keyword, rgb, or rgba value as what you assign to the `fillStyle` and `strokeStyle` properties. Now, why you would ever want to change these awesome blue colors is completely beyond me? :P

> ### Measuring Your Text Size
>
> One text-related property we didn't cover is the appropriately named `measureText` property. This property returns in pixels how wide or tall the text you are drawing is. For a great example of how this property works and why you would use it, check out the Detect Whether a Font is Installed article.