

Code Art Worksheet

Learning outcomes

Learn about the creative side of coding and how artists can use code to make interactive pieces of art. Make your own code art using techniques used by real web developers and learn more about jobs that use these skills.

Introduction

What do you think of when someone mentions programming and coding?

Millions of columns and rows of numbers and symbols? A nerdy dude with a tie and glasses?

This activity is going to take those ideas and smash them to pieces! Today we're going to explore how you can use code to make a piece of art.

Activity on next page...

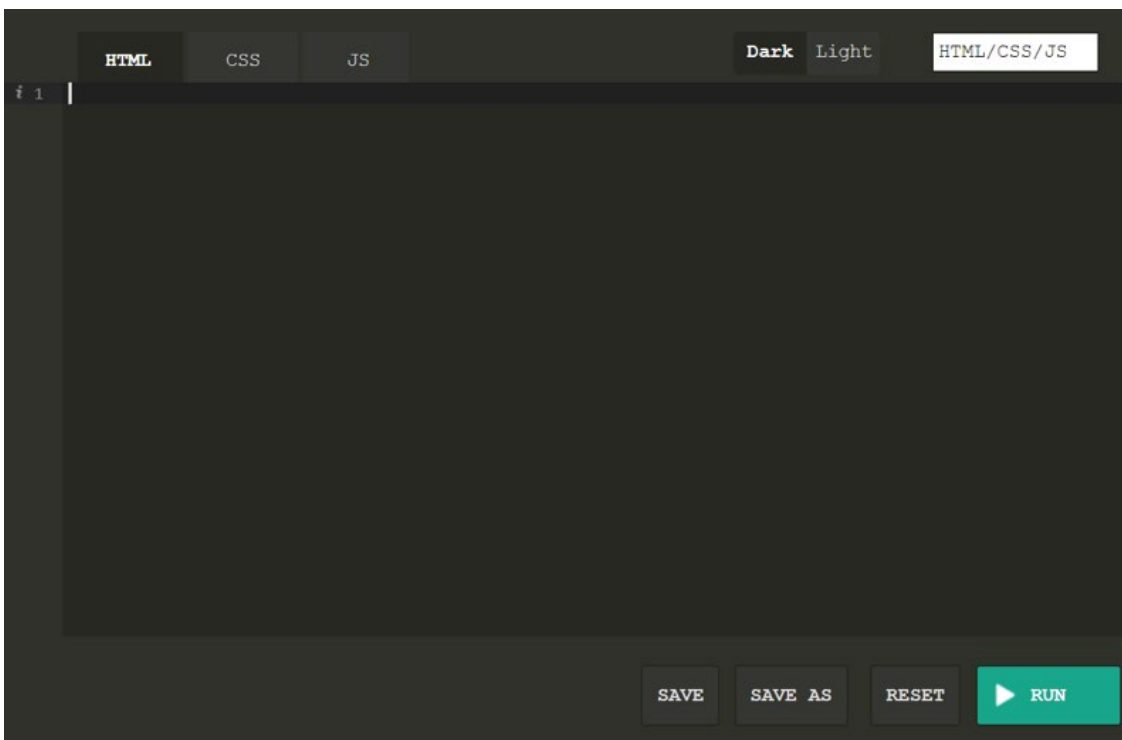
Activity

First, we need to find out what art is. Let's start by watching [this video](#) (1).

Now that we have some background on what art is, let's find out about the code we'll be using by watching a [second video](#) (2).

Now that we understand what tools we'll be using let's open [SoloLearn's](#) (3) Code Playground and get started. We've created a video guide that might help you through this activity – you can view it [here](#) (4).

1. Prepare your canvas. Get rid of any pre-written code



Activity on next page...

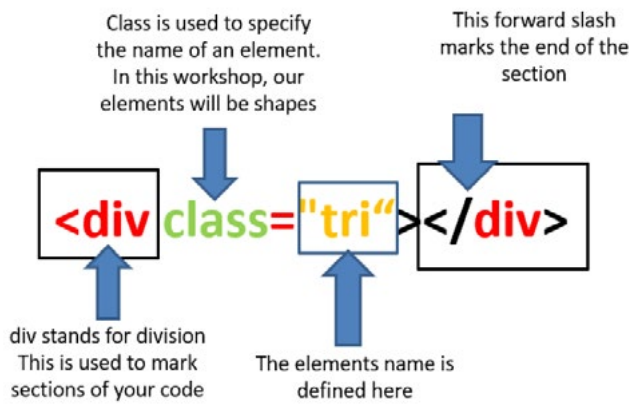
- Next, we need to define the content of the code. We are going to start by making a triangle.



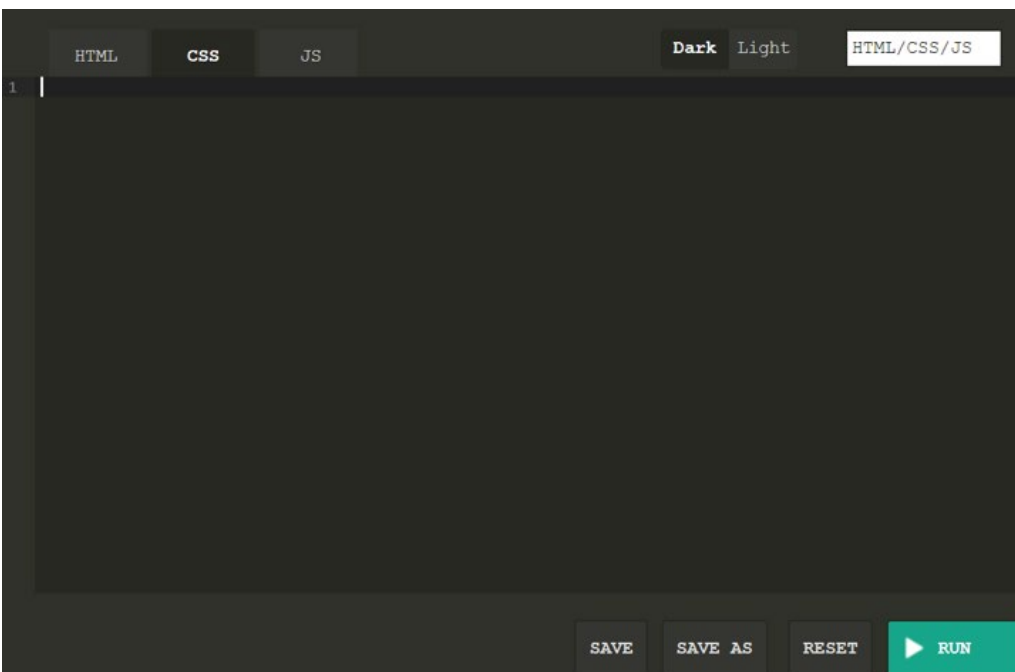
A screenshot of a code editor with three tabs: HTML, CSS, and JS. The HTML tab is active. The code editor shows two lines of code: line 1 contains `<div class="tri"></div>` and line 2 is empty with a cursor at the start.

Type in `<div class="tri"></div>` this defines a section of HTML

Code Dissection!



- Click on the CSS tab as we did in step 1, we need to get rid of any pre-written code



Activity on next page...

4. Click on the CSS tab as we did in step 1, we need to get rid of any pre-written code.

Type in the code bellow

Note!
HTML uses the American spelling of certain words

```
.tri{  
  width:20px;  
  height:20px;  
  background-color:red;  
}
```

```
1 .tri{  
2  
3   width:20px;  
4   height:20px;  
5   background-color:red;  
6  
7 }
```

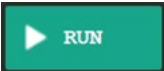


It should look like this

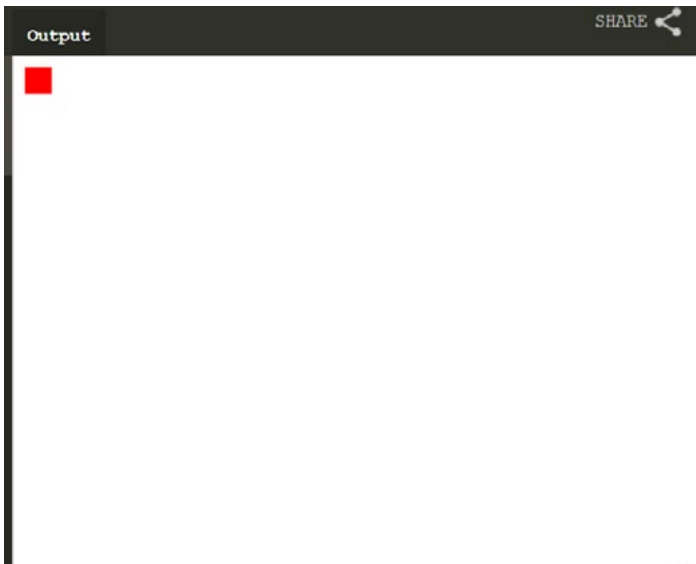
Context Box!

You should be noticing that the code is made up of letters, numbers and symbols.

Symbols like : { <> this is called syntax and these symbols are like the punctuation in a sentence. They tell your computer how the code flows. Where it ends, where it should take a new line. Things like that.

5. Press the run button  this is how we can determine if our code works

In the output tab you should see a red square like this:



NOTE:

You can change the length and height of the square by editing these two lines of code

width: 20px;

height: 20px;

And you can change the colour of your square by changing this line of code

background-color:red;

Activity on next page...

6.

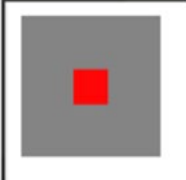
Now lets give our square a border, this will help us turn our square into a triangle.

Type in:
border:60px solid gray;

Directly underneath
background-color:red;

```
1 = .tri{
2
3     width:20px;
4     height:20px;
5     background-color:red;
6     border:60px solid gray;
7 }
```

Press run and your code should produce something like this:



7.

Now we need to split our border into 4 pieces.

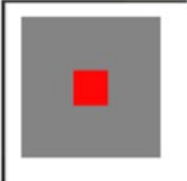
Change **border:60px solid gray;** to **border-top:60px solid gray;**

Underneath **border-top:60px solid gray;**
Type these lines in:-
border-right:60px solid gray;
border-bottom:60px solid gray;
border-left:60px solid gray;

Your code should look like this

```
HTML CSS JS
1 = .tri{
2
3     width:20px;
4     height:20px;
5     background-color:red;
6     border-top:60px solid gray;
7     border-right:60px solid gray;
8     border-bottom:60px solid gray;
9     border-left:60px solid gray;
10 }
```

Don't worry about these symbols, your code will still work. 😊



Activity on next page...

8.

Pick four colours and change **grey** into your selected colours like I have done below.

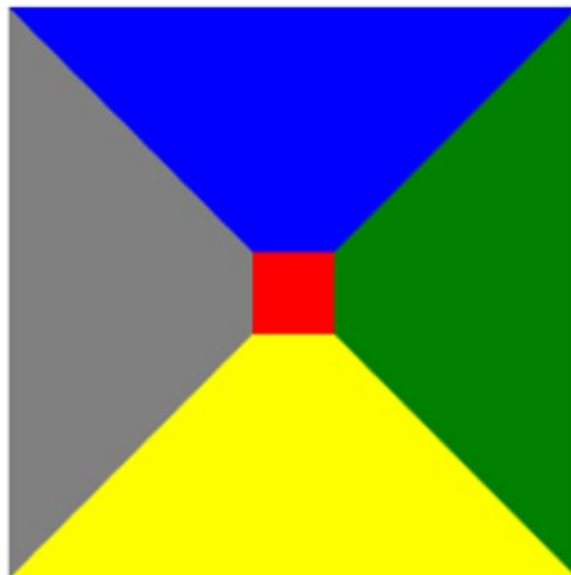
```
1 .tri{
2
3   width:20px;
4   height:20px;
5   background-color:red;
6   border-top:60px solid blue;
7   border-right:60px solid green;
8   border-bottom:60px solid yellow;
9   border-left:60px solid gray;
10 }
```

When you click run you should now have something like this



9.

Any of the coloured triangles could be the triangle we want, all we have to do is get rid of the sections that we don't need. For example the red square



Activity on next page...

10. We should change the value of width and height and change them to 0px

```
.tri{  
  
    width:0px;  
    height:0px;
```

Pick one of your four triangles and then change the remaining three to transparent. Like this:-

```
6     border-top:60px solid transparent;  
7     border-right:60px solid transparent;  
8     border-bottom:60px solid yellow;  
9     border-left:60px solid transparent;
```

You should now have a shape that looks like this



To get rid of the red background all we need to do is delete “background-color:red;”

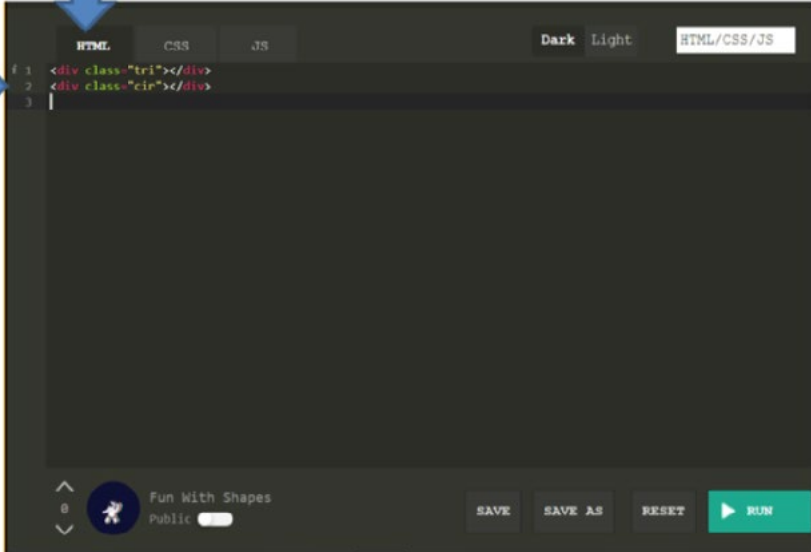
Activity on next page...

11.

Now that we have made a triangle, lets make a circle.

Click on the HTML Tab

You will need to tell CSS that you would like to create another shape, To do this create another **<div>** and call it **"cir"**



```
1 <div class="tri"></div>
2 <div class="cir"></div>
3
```

12.

Remember everything in HTML and CSS is made up of squares. So lets take a new line underneath the }
And lets write

.cir{
background-color:red;
width:120px;
height:50px;
}

Your code should look like this!




```
1 .tri{
2   width:0px;
3   height:0px;
4   border-top:60px solid transparent;
5   border-right:60px solid transparent;
6   border-bottom:60px solid yellow;
7   border-left:60px solid transparent;
8 }
9
10
11 .cir{
12   background-color:red;
13   width:120px;
14   height:50px;
15 }
```


Activity on next page...

13.

Surprise, you built a house with code!



But we're wanting to make a circle so change your width and height to 50px
Like this

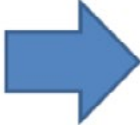



```
HTML CSS JS
1 .tri{
2
3   width:0px;
4   height:0px;
5   border-top:60px solid transparent;
6   border-right:60px solid transparent;
7   border-bottom:60px solid yellow;
8   border-left:60px solid transparent;
9 }
10
11 .cir{
12   background-color:red;
13   width:50px;
14   height:50px;
15 }
```

14.

Now we need to make another border, but this one will be different, this time we will be typing in **border-radius:50px;**

This will give you something like this:



```
.cir{
  background-color:red;
  width:50px;
  height:50px;
  border-radius:50px;
}
```

Coding Challenge:
Can you work out how to make a square?

Activity on next page...

15.

Lets see if we can change the position of our shapes. A rule of thumb to remember is that a shape will always appear on the left hand corner of its environment. This will help us place our shapes.

If we type in

`position:relative;`

`top:50px;`

In our triangle section, we should see something that looks like this

```
1 .tri{
2
3   width:0px;
4   height:0px;
5   border-top:60px solid transparent;
6   border-right:60px solid transparent;
7   border-bottom:60px solid yellow;
8   border-left:60px solid transparent;
9   position:relative;
10  top:50px;
11 }
```



16.

50 pixels has moved our triangle down our screen, if we type in a negative number then we should see the opposite effect

Lets change
`top:50px;`
To
`top:-50px;`



```
1 .tri{
2
3   width:0px;
4   height:0px;
5   border-top:60px solid transparent;
6   border-right:60px solid transparent;
7   border-bottom:60px solid yellow;
8   border-left:60px solid transparent;
9   position:relative;
10  top:-50px;
11 }
```



The triangle has moved further away from the circle and square

Activity on next page...

17.

Finally, lets try to move our triangle left and right, below **top: -50px** type in **left:50px**

```
.tri{  
  width:0px;  
  height:0px;  
  border-top:60px solid transparent;  
  border-right:60px solid transparent;  
  border-bottom:60px solid yellow;  
  border-left:60px solid transparent;  
  position:relative;  
  top:-50px;  
  left:50px;  
}
```



The triangle has moved to the right, this is because the code we have written has added 50 pixels on the left side of the screen between the triangle and it's point of origin

Challenge!

Now that you know how to generate and move shapes using HTML and CSS try and make your own artwork using the skills you have learned so far!

Skills

Did you enjoy this activity? Can you list 3 skills that you have used by creating this code?

- 1.
- 2.
- 3.

Some of the jobs associated with today's activity are:

[Web Developer](#) (5), [Web Editor](#) (6), [Software Developer](#) (7), [Ethical Hacker](#) (8)

And many more that you can find out about on the [My World of Work](#) website.

Website references

1. What is Art? <https://bit.ly/2ZnbSIW>
2. What is HTML <https://bit.ly/3g8lQ0A>
3. Sololearn Code Playground <https://code.sololearn.com/#html>
4. Code Art activity guide <https://bit.ly/3hyAb77>
5. Web Developer <https://bit.ly/3cRb7FJ>
6. Web Editor <https://bit.ly/3e2WQWB>
7. Software Developer <https://bit.ly/2XdMKLJ>
8. Ethical Hacker <https://bit.ly/3g9nYFt>
9. My World of Work <https://www.myworldofwork.co.uk/>