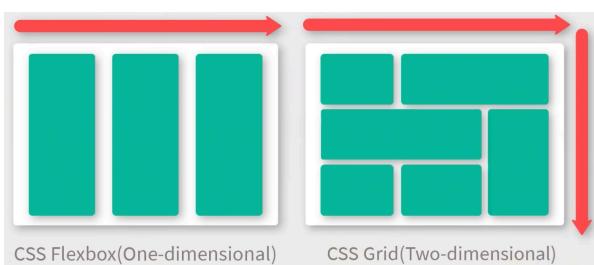


Advanced CSS

Section 3: CSS Grid

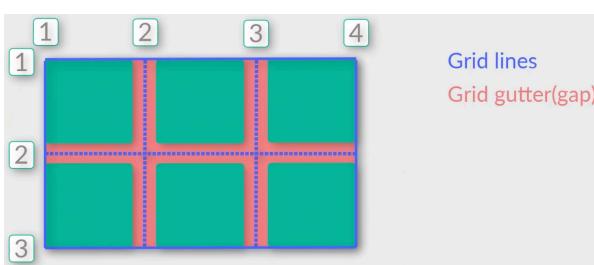
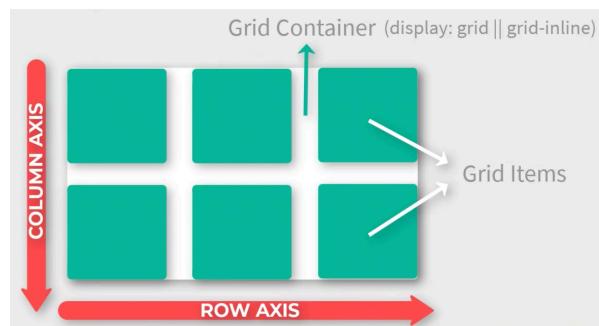
3.1 Introduction and How to Create a Grid

CSS grid allows us to create layout without floats or any older hacks and its is also more powerful compared to CSS Flexbox. CSS Grid is getting more and more popular because it gives more flexibility and control of layout than even before. Both the CSS Flexbox and CSS Grid layout modules work perfectly together and we can utilise the best of both worlds.



The difference between CSS Flexbox and CSS Grid is that Flexbox is one-dimensional while CSS Grid is two-dimensional. Flexbox only allows to align items across rows or columns but not together. CSS Grid allows to align in both the row and column simultaneously.

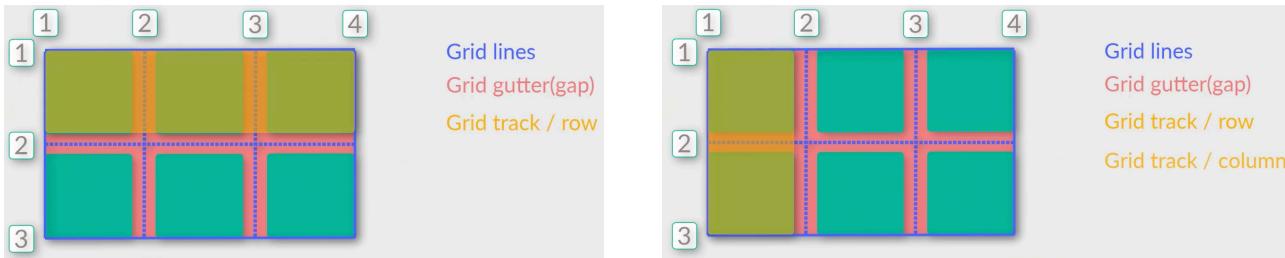
In the same way as Flexbox where we had `flex-container` with `flex-items` CSS grid operates in the same way with `grid-container` and `grid-items`. CSS Grid also has row axis as a horizontal direction and a column axis as the vertical direction. In Flexbox we are able to change the horizontal and vertical directions but in the case of CSS Grid we are not able to change the direction of the axis.



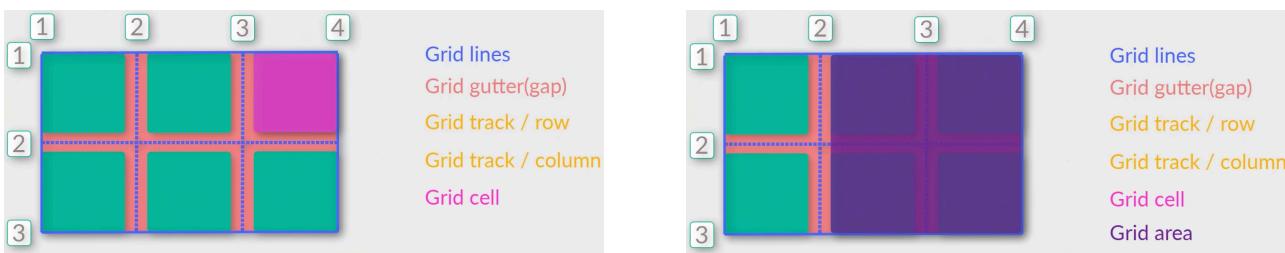
Grid lines are vertical and horizontal lines that divide the CSS Grid and separate the rows and columns. The number of columns and rows grid lines are always one greater than the total number of rows and columns. In example on the left we have a 3 column by 2 row in which case the grid lines would be 4 by 3.

With the use of grid lines we are able to move grid items to different positions. We can also create space between grid items horizontally and vertically and this space is known as the grid gutter (i.e. the gap between rows and columns). Therefore we have grid-column gap going vertically and grid-row gap going horizontally.

Grid items with grid gaps are called grid-track and so in the case of the horizontal grid track we have what is called the grid track row and for the vertical grid track we have what is called the grid track column.



The single unit of the CSS grid is called a grid cell while any area of the grid is called the grid area.



We need to set the display property to grid or grid-inline. The difference between grid and grid-inline values are almost similar to the difference between flex and in-line flex values for Flexbox.

Setting the display value to grid is not enough and we need to set other property values for the rows and columns in order to setup the CSS grid.

Below are the various properties that we can use with grid-container and grid-items:

Grid-Container Property	Description
grid-template-columns	Defines the number and the size of the columns e.g. 150px 150px 150px is three columns with the size of 150px each
grid-template-rows	Define the number and the size of rows e.g. 150px 150px is two rows with the size of 150px each
grid-template-areas	Specifies areas within the grid layout. Name grid items using the grid-area property and then reference to the name in the grid-template-area property
grid-template	Shorthand syntax for grid-template-columns, grid-template-rows and grid-template-areas properties
grid-column-gap	Create a grid gap between the columns
grid-row-gap	Create a grid gap between the rows
grid-gap	Shorthand syntax for grid-column-gap and grid-row-gap properties
justify-items	

Grid-Container Property	Description
align-items	
justify-content	
align-content	
grid-auto-columns	
grid-auto-rows	
grid-auto-flow	

Gird-Item Properties	Description
grid-column-start	
grid-column-end	
grid-column	Shorthand syntax for grid-column-start and grid-column-end properties
grid-row-start	
grid-row-end	
grid-row	Shorthand syntax for grid-row-start and grid-row-end properties
grid-area	Shorthand syntax for grid-column-start, grid-column-end, grid-row-start and grid-row-end properties. The grid-area property can also be used to assign a name to a grid-item and the grid item can be referenced by the grid-template-areas property
justify-self	
align-self	
order	

Disclaimer: As at May 2020, Mozilla Firefox has the best developer tool for CSS Grid and is recommended to use to understand how CSS Grid works in a clear visual way. This browser allows us to display an overlay grid on our webpage to clearly see the CSS Grid as well as the grid lines and numbers for the lines. This is a feature only available on Mozilla Firefox.

Important: At the moment grid gap properties apply the same size of gaps to all column/row and we cannot add different gap sizes for individual column/row. For this we would need to apply different techniques and tricks.

3.2 Fractional Units

When defining the grid-template-columns and grid-template-rows values we can use any measurement units such as px, rem, em, etc.

The auto value allows the column/row to take up the available width.

For example, if we have a three column grid and want the last column take up the remaining width available the auto value can be used e.g 150px 150px auto;



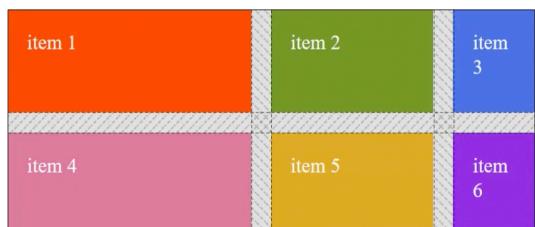
If two columns have an auto value and the third column has a measurement value, the two auto value columns will equally take the available width e.g. 150px auto auto;



Instead of using the auto measurement values there is a special measurement unit created for CSS Grid called fractional unit. This is a more flexible measurement unit. Therefore in the second example we can write the value as 150px 1fr 1fr; to achieve the same result.



This unit allows us to divide space into a fraction of the available space. We can manipulate on the size of columns using fractional units for example, suppose we want the second column to be twice as big compared to the first and last column the value would be represented as such: 1fr 2fr 1fr;



In the example of value: 3fr 2fr 1fr; the first column is three times bigger than the last column and the second column is twice as large as the last column. This demonstrates the flexibility and ease of using fractional units with CSS Grid.

The fractional units can be used with both the grid-template-column and the grid-template-rows. Where the units are exactly the same the repeat() function can be used to avoid repeating the values over again. This function takes in two arguments the first being the number of repeat and the second the measurement unit e.g repeat(3, 1fr); Where we want the first column to be a different size and the other two columns to be the same we can write the value as an example: 50% repeat(2, 1fr);