



Responsive Web Design (RWD)

What is Responsive Web Design?



Responsive web design is the practice of building a website suitable to work on every device and every screen size, no matter how large or small, mobile or desktop.

Responsive web design makes your web page look good on all devices.

Responsive web design uses only HTML and CSS.

Designing For The Best Experience For All Users



Desktop



Tablet



Phone

What is The Viewport?

The viewport is the user's visible area of a web page.

Setting The Viewport

HTML5 introduced a method to let web designers take control over the viewport, through the `<meta>` tag.

```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```

This gives the browser instructions on how to control the page's dimensions and scaling.

The `width=device-width` part sets the width of the page to follow the screen-width of the device (which will vary depending on the device).

The `initial-scale=1.0` part sets the initial zoom level when the page is first loaded by the browser.

Size Content to The Viewport

if the user is forced to scroll horizontally, or zoom out, to see the whole web page it results in a poor user experience.

RWD guide lines

1. Flexible Layouts
 2. Media Queries
 3. Mobile First approach
 4. Flexible Media-content (images , video)
-

Flexible Layouts / grids

Responsive Web Design Formula

(target / context) x 100 = result %

e.g

$(340/538)*100 = 63.197026\%$

Media Queries

Media query is a CSS technique introduced in CSS3.

It uses the `@media` rule to include a block of CSS properties only if a certain condition is true.

If the browser window is 600px or smaller, the background color will be lightblue:

```
@media only screen and (max-width: 600px) {  
  body {  
    background-color: lightblue;  
  }  
}
```

Mobile First approach

Mobile First means designing for mobile before designing for desktop or any other device (This will make the page display faster on smaller devices).

Demo

Chania

The Flight

The City

The Island

The Food

The City

Chania is the capital of the Chania region on the island of Crete. The city can be divided in two parts, the old town and the modern city.

What?

Chania is a city on the island of Crete.

Where?

Crete is a Greek island in the Mediterranean Sea.

How?

You can reach Chania airport from all over Europe.

Resize the browser window to see how the content respond to the resizing.



Building a Responsive Grid-View

First ensure that all HTML elements have the box-sizing property set to border-box. This makes sure that the padding and border are included in the total width and height of the elements

```
* {
  box-sizing: border-box;
}
```

25%	75%
-----	-----

First we must calculate the percentage for one column: $100\% / 12 \text{ columns} = 8.33\%$.

```
.col-1 {width: 8.33%;}
.col-2 {width: 16.66%;}
.col-3 {width: 25%;}
.col-4 {width: 33.33%;}
.col-5 {width: 41.66%;}
.col-6 {width: 50%;}
```

```
.col-7 {width: 58.33%;}
.col-8 {width: 66.66%;}
.col-9 {width: 75%;}
.col-10 {width: 83.33%;}
.col-11 {width: 91.66%;}
.col-12 {width: 100%;}
```

```
[class*="col-"] {
  float: left;
  padding: 15px;
  border: 1px solid red;
}
```

```
<div class="row">
  <div class="col-3">...</div> <!-- 25% -->
  <div class="col-9">...</div> <!-- 75% -->
</div>
```

```
<!DOCTYPE html>
<html>
<head>
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<style>
* {
  box-sizing: border-box;
}

.row::after {
  content: "";
  clear: both;
  display: table;
}

[class*="col-"] {
  float: left;
  padding: 15px;
}

.col-1 {width: 8.33%;}
.col-2 {width: 16.66%;}
.col-3 {width: 25%;}
.col-4 {width: 33.33%;}
.col-5 {width: 41.66%;}
.col-6 {width: 50%;}
.col-7 {width: 58.33%;}
.col-8 {width: 66.66%;}
.col-9 {width: 75%;}
.col-10 {width: 83.33%;}
.col-11 {width: 91.66%;}
.col-12 {width: 100%;}

html {
  font-family: "Lucida Sans", sans-serif;
}

.header {
  background-color: #9933cc;
  color: #ffffff;
  padding: 15px;
}

.menu ul {
  list-style-type: none;
  margin: 0;
  padding: 0;
}

.menu li {
  padding: 8px;
  margin-bottom: 7px;
}
```

```

background-color: #33b5e5;
color: #ffffff;
box-shadow: 0 1px 3px rgba(0,0,0,0.12), 0 1px 2px rgba(0,0,0,0.24);
}

.menu li:hover {
background-color: #0099cc;
}
</style>
</head>
<body>

<div class="header">
<h1>Chania</h1>
</div>

<div class="row">
<div class="col-3 menu">
<ul>
<li>The Flight</li>
<li>The City</li>
<li>The Island</li>
<li>The Food</li>
</ul>
</div>

<div class="col-9">
<h1>The City</h1>
<p>Chania is the capital of the Chania region on the island of Crete. The city can be divided in two parts, the old town and the new town.
<p>Resize the browser window to see how the content respond to the resizing.</p>
</div>
</div>

</body>
</html>

```

What is a Media Query?

Media query is a CSS technique introduced in CSS3.

It uses the `@media` rule to include a block of CSS properties only if a certain condition is true.

If the browser window is 600px or smaller, the background color will be lightblue:

```

@media only screen and (max-width: 600px) {
body {
background-color: lightblue;
}
}

```

Add a Breakpoint

When the screen (browser window) gets smaller than 768px, each column should have a width of 100%:

```
/* For desktop: */
.col-1 {width: 8.33%;}
.col-2 {width: 16.66%;}
.col-3 {width: 25%;}
.col-4 {width: 33.33%;}
.col-5 {width: 41.66%;}
.col-6 {width: 50%;}
.col-7 {width: 58.33%;}
.col-8 {width: 66.66%;}
.col-9 {width: 75%;}
.col-10 {width: 83.33%;}
.col-11 {width: 91.66%;}
.col-12 {width: 100%;}

@media only screen and (max-width: 768px) {
  /* For mobile phones: */
  [class*="col-"] {
    width: 100%;
  }
}
```

Always Design for Mobile First

Mobile First means designing for mobile before designing for desktop or any other device (This will make the page display faster on smaller devices).

This means that we must make some changes in our CSS.

Instead of changing styles when the width gets *smaller* than 768px, we should change the design when the width gets *larger* than 768px. This will make our design Mobile First:

```
/* For mobile phones: */
[class*="col-"] {
  width: 100%;
}

@media only screen and (min-width: 768px) {
  /* For desktop: */
  .col-1 {width: 8.33%;}
  .col-2 {width: 16.66%;}
  .col-3 {width: 25%;}
  .col-4 {width: 33.33%;}
  .col-5 {width: 41.66%;}
  .col-6 {width: 50%;}
  .col-7 {width: 58.33%;}
  .col-8 {width: 66.66%;}
  .col-9 {width: 75%;}
  .col-10 {width: 83.33%;}
  .col-11 {width: 91.66%;}
  .col-12 {width: 100%;}
}
```

Typical Device Breakpoints

```

/* Extra small devices (phones, 600px and down) */
@media only screen and (max-width: 600px) {...}

/* Small devices (portrait tablets and large phones, 600px and up) */
@media only screen and (min-width: 600px) {...}

/* Medium devices (landscape tablets, 768px and up) */
@media only screen and (min-width: 768px) {...}

/* Large devices (laptops/desktops, 992px and up) */
@media only screen and (min-width: 992px) {...}

/* Extra large devices (large laptops and desktops, 1200px and up) */
@media only screen and (min-width: 1200px) {...}

```

Orientation: Portrait / Landscape

```

@media only screen and (orientation: landscape) {
  body {
    background-color: lightblue;
  }
}

```

Hide Elements With Media Queries

```

/* If the screen size is 600px wide or less, hide the element */
@media only screen and (max-width: 600px) {
  div.example {
    display: none;
  }
}

```

Change Font Size With Media Queries

```

/* If the screen size is 601px or more, set the font-size of <div> to 80px */
@media only screen and (min-width: 601px) {
  div.example {
    font-size: 80px;
  }
}

/* If the screen size is 600px or less, set the font-size of <div> to 30px */
@media only screen and (max-width: 600px) {
  div.example {
    font-size: 30px;
  }
}

```

CSS @media Rule

Change the background color of the element to "lightblue" when the browser window is 600px wide or less: @media only screen and (max-width: 600px) { body { background-color: lightblue; }} Try it Yourself
" More "Try it Yourself" examples below. The @media rule is used in media queries to apply different

 https://www.w3schools.com/cssref/css3_pr_mediaquery.asp



Responsive Web Design - Images

Using The width Property

```
img {  
  width: 100%;  
  height: auto;  
}
```

```
img {  
  max-width: 100%;  
  height: auto;  
}
```