

# Media Types & Media Features

Same HTML, Different CSS

R. Scott Granneman & Jans Carton

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- » at [files.granneman.com/presentations/webdev/CSS-Media-Specific-Styles.txt](http://files.granneman.com/presentations/webdev/CSS-Media-Specific-Styles.txt)

# Overview

```
@media (min-width: 768px) {  
  .container {  
    display: flex;  
  }  
  aside {  
    font-size: .9rem;  
  }  
}
```

A sample `@media` *at-rule* with a *media query*

*A media query* allows you to change how content is presented in different media without having to change the content itself

A media query consists of...

- » a *media type* (a device; e.g., `print` or `screen`)
- » zero or more *media features* (a test for a single, specific feature of the device or browser; e.g., `min-width` or `orientation`)

A media query is either true (apply it!) or false (ignore it!)

Media queries are applied first, & *then* the rendering engine applies the CSS cascade



Therefore, you want to put the media queries *after* the main rule sets

Why should the media-specific declarations come *after* the general declarations?

Using the cascade...

1. *Importance* is tied (it's all by an *author*)
2. *Specificity* is tied (as long as the media-specific declaration is the same as the general declaration — & remember, `@media` itself doesn't change specificity)
3. *Order* therefore means that the media-specific declaration wins

2 ways to specify media queries

- » Link to multiple style sheets using `<link>`
- » Within a stylesheet



Method 1: Link to multiple style sheets

```
<head>  
  <link rel="stylesheet" href="main.css">  
  
  <link rel="stylesheet" href="print.css"  
media="print">  
</head>
```

```
<head>
```

```
  <link rel="stylesheet" media="screen"  
href="screen.css">
```

```
  <link rel="stylesheet" media="(max-width:  
800px)" href="small-screen.css">
```

```
</head>
```

You probably do *not* want to link to multiple style sheets

Extra server calls

Method 2: Put the media-specific rule sets at the end of your main stylesheet

Do this: create a single style sheet & link to it in `<head>`


```
<head>  
  <link rel="stylesheet" href="main.css">  
</head>
```

Put your styles for everything at the top, with specific media styles at the end

```
[styles for all media]
```

```
@media print {  
  [styles for print]  
}
```

```
html {  
    font-size: 16px; background-color: black;  
}  
  
aside {  
    width: 12rem;  
}  
  
@media print {  
    html {  
        font-size: 12pt; background-color: white;  
    }  
  
    aside {  
        display: none;  
    }  
}
```

				ios		
@media	9	1	1.3	3.1	1	1
Media Features	9	3.5	4	3.2	21	2.1



# Media Types

You've been using this code

HTML 4.01

```
<link rel="stylesheet" type="text/css"
href="main.css">
```

HTML5

```
<link rel="stylesheet" href="main.css">
```

Actually,

```
<link rel="stylesheet" href="main.css">
```

is the same as

```
<link rel="stylesheet" href="main.css"  
media="all">
```

Media Queries Level 4\* defines 4 media types

- » **print**: printers & Print Preview
- » **speech**: screen readers for visually disabled users, not browsers (was **aural**)
- » **screen**: “all devices that aren’t matched by print or speech”
- » **all**: all media type devices (default)

## Deprecated media types:



- » **braille**: Braille tactile feedback devices
- » **embossed**: paged Braille printers
- » **handheld**: small or handheld devices
- » **projection**: projected presentations
- » **tty**: fixed-pitch character grid (teletypes & terminals)
- » **tv**: television-type devices

“It is expected that all of the media types will also be deprecated in time, as appropriate media features are defined which capture their important differences.”  
—Media Queries Level 4, Editor’s Draft, 1 July 2018

# Media Styles in Action



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#### **2 What are the standards?**

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##### 2.1.1 What is the W3C

##### 2.1.2 What does it do?

##### 2.1.3 What are the W3C standards?

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##### 2.1.3.2 XML 1.0

##### 2.1.3.3 XHTML 1.0, 1.1, XHTML Modularization

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##### 3.1 Accessibility

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But in this period of tremendous growth, the Web needs guidance to realize its full potential. Web standards are this guidance. These standards help ensure that everyone has access to the information we are providing, and also make web development faster and more enjoyable.

Standards compliance makes it easier for people with special needs to use the Web. Blind people may have their computer read web pages to them. People with poor eyesight may have pages rearranged and magnified for



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```
h1 {
  float: left;
  width: 40%;
  margin-left: 20px;
  padding-left: 75px;
  background: #191919
    url(/files/theme/h1.png)
    no-repeat 0 0;
  font-size: 200%;
}
```

```
#content-branding {
  border-bottom: 1px solid #fff;
  padding: 1.5em 0;
  background-color: #000;
}
```



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```
h1 {
  font-family: Helvetica, Arial,
    sans-serif;
  font-weight: bold;
  font-size: 180%;
}

#content-branding {
  display: none;
}
```

```
/* screen */
```

```
h1 {  
    float: left;  
    width: 40%;  
    margin-left: 20px;  
    padding-left: 75px;  
    background: #191919  
        url(/files/theme/  
        h1.png) no-repeat  
        0 0;  
    font-size: 200%;  
}
```

```
/* print */
```

```
h1 {  
    font-family:  
        Helvetica, Arial,  
        sans-serif;  
    font-weight: bold;  
    font-size: 180%;  
}
```

```
/* screen */
```

```
#content-branding {  
    border-bottom: 1px  
        solid #fff;  
    padding: 1.5em 0;  
    background-color:  
        #000;  
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```

```
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## PRO TIP

To test print styles, use Print Preview instead of actually printing

# Common Print Styles

The following styles are *common* — a lot of print style sheets use these — but are not required

They are here to give you ideas about what you can use

```
html {  
    font-size: 12pt;  
    background-color: white;  
    color: black;  
}
```

```
a[href] {  
    color: black;  
    text-decoration: underline;  
}
```

Make all links black & underlined



```
a[href]::after {  
    color: black;  
    text-decoration: underline;  
    content: " (" attr(href) ") ";  
}
```

When printed, `<a href="http://  
www.hplovecraft.com/writings/">Writings</a>`  
looks like this:

Writings (http://www.hplovecraft.com/  
writings/)



```
a[href^="#"]::after,  
a[href^="javascript:"]::after {  
    content: "";  
}
```

Don't print links that are fragment identifiers or use the `javascript:` pseudo protocol

When printed, `<a href="#toc">Table of Contents</a>` looks like this:

Table of Contents

```
h1, h2, h3 {  
    color: black;  
    padding-bottom: 1px;  
    border-bottom: 1px solid black;  
    page-break-after: avoid;  
    break-after: avoid;  
}
```

When printing, put a nice border under headings, & do not allow pages to break immediately after them

```
h2,  
h3,  
p {  
    orphans: 3;  
    widows: 3;  
}
```

Avoid widows & orphans (see Print CSS next for more info)!

```
pre {  
    white-space: pre-wrap !important;  
    page-break-inside: avoid;  
    break-inside: avoid;  
}
```

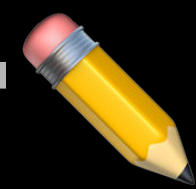
When printed, allow `<pre>` to wrap & avoid breaking across pages

```
img,  
tr {  
    page-break-inside: avoid;  
    break-inside: avoid;  
}
```

When printing, don't allow `<img>` or `<tr>` to break across pages

```
aside,  
nav,  
.adbanner {  
    display: none;  
}
```

Most of your print styles will probably be *removing* things



## SIDE NOTE

Certain CSS properties can be used with printing, but are also available for layout, so look for the *Multi-Column Layout* section in the *CSS Layout* presentation for more info

- » `(page-)break-after`
- » `(page-)break-before`
- » `(page-)break-inside`
- » `widows`
- » `orphans`

# Media Features



You limit the style sheet's *scope* based on *media features*, such as **width**, **height**, & **color**

Almost all media features can be prefixed with...

- » **min-**: equal to or greater than
- » **max-**: equal to or less than

```
@media (min-width: 769px) {  
  .hamburger-nav {  
    display: none;  
  }  
}
```

`min-width` is a *media feature*

`(min-width: 769px)` is an *expression*

If the media (in this case, the viewport) has a `min-width` of `769px`, then the style rules are applied to it

```
@media (orientation: portrait) {  
  .sidebar {  
    float: none;  
  }  
}
```

`orientation` is a *media feature*

`(orientation: portrait)` is an *expression*

If the media (in this case, the viewport) has an `orientation` of `portrait`, then the style rules are applied to it

```
@media (min-width: 700px) and (orientation: landscape) {  
    ...  
}
```

`min-width` & `orientation` are *media features*

`(min-width: 700px) & (orientation: landscape)` are *expressions*

`and` is a *logical operator* (others are `not` & `only`)

`(min-width: 700px) and (orientation: landscape)` is a *complex media query*

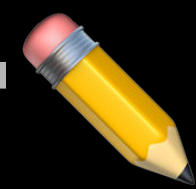
If the media has a `min-width` of `700px` AND an `orientation` of `landscape`, then the style rules are applied to it

Media features are either *viewport-centric* (which we care about for responsive web design) or *device-centric* (for special cases)

`min-width` & `max-width` are  
essential to responsive design!

## Viewport-centric

- » `width`: width of viewport
  - » `height`: height of viewport
  - » `aspect-ratio`: `<ratio>` of horizontal pixels to vertical pixels of viewport
  - » `orientation`: `landscape` or `portrait`
- 

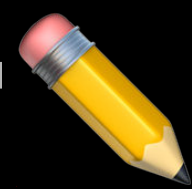


## SIDE NOTE

`<ratio>`

Represents *aspect ratios* (proportions) in media queries: a positive `<integer>`, followed by `/`, followed by a positive `<integer>`

No units!



## SIDE NOTE

### Examples

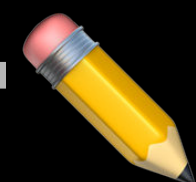
$4/3$ : traditional TV

$16/9$ : widescreen TV






$185/100$ : traditional movies

$239/100$ : widescreen movies



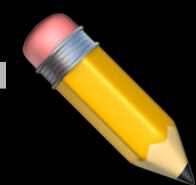


## SIDE NOTE

				iOS		
<ratio>	9	3.5	5	4.2	4	Y

## Device-centric: display quality

- » **resolution**: pixel density of the output device (**infinite** or **<resolution>**)
- » **scan**: scanning process of television (**interlace** or **progressive**)
- » **grid**: grid device or a bitmap device (**0** or **1**)



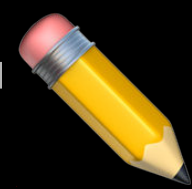
## SIDE NOTE

`<resolution>`

Represents the *resolution* of a device: its density of pixels, expressed as a `<number>` immediately followed by a unit of resolution

Units

- » `dpi`: dots per inch
- » `dpcm`: dots per centimeter
- » `dppx`: dots per px unit; `1dppx` is equivalent to `96dpi`



## SIDE NOTE

					ios		
<resolution>	9	12	8	—	—	29	Y
dppx	—	12	16	—	—	29	Y

## Device-centric: display quality

- » **update**: frequency that layout can be updated (**none**, **slow**, or **fast**)\*
- » **overflow-block**: treatment of potential overflow on *block* axis (**none**, **paged**, **optional-paged**, or **scroll**)\*
- » **overflow-inline**: treatment of potential overflow on *inline* axis (**none**, **paged**, **optional-paged**, or **scroll**)\*

\* New additions from Media Queries Level 4

## Device-centric: color media

- » **color**: bit depth of a standard display (**<integer>**)
- » **color-index**: number of colors in an indexed color display (**<integer>**)
- » **monochrome**: bit depth of monochrome display (**<integer>**)
- » **color-gamut**: range of available colors (**srgb**, **p3**, or **rec2020**)\*

\* New additions from Media Queries Level 4



## Device-centric: interaction

- » **pointer**: primary pointing device? (**none**, **coarse**, or **fine**)\*
- » **any-pointer**: any pointing device available? (**none**, **coarse**, or **fine**)\*
- » **hover**: can primary pointing device hover over elements? (**none** or **hover**)\*
- » **any-hover**: can any available pointing device hover over elements? (**none** or **hover**)\*

\* New additions from Media Queries Level 4

**DEPRECATED**

## Device-centric

- » `device-width`: width of screen in pixels
- » `device-height`: height of screen in pixels
- » `device-aspect-ratio`: `<ratio>` of horizontal pixels to vertical pixels of screen



Mobile-  
Specific

overscroll-behavior

prefers-reduced-motion

Thank you!

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# Media Types & Media Features

Same HTML, Different CSS

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Last updated 2020-07-24

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# Changelog

2020-07-24 1.11: Moved **a11** to the end of Media Types; minor wording fixes; fixed wording about relationship of **@media** & the cascade

# Changelog

2020-07-20 1.10: Updated icons in compatibility tables; added sample `@media` query at beginning; moved `@media` compatibility table to end of *Overview*; added note in *Common Print Styles* about print-specific properties that were moved to *CSS Layout*; added note re: importance of `min-width` & `max-width` to responsive design

2020-07-17 1.9: Moved print styling from *Print CSS* to *CSS Typography*; minor fixes



# Changelog

2018-11-20 1.8: Changed `body` to `html` in Common Print Styles; fixed all compatibility tables; added illustrations of `widows` & `orphans`; added lots more examples to Common Print Styles; re-ordered & rewrote how to apply media queries; added note re: common print styles

2018-10-17 1.7: Updated theme to Granneman 1.5;

# Changelog

2018-08-21 1.6: Added that some device-centric media queries are deprecated; added Deprecated label to appropriate media types; updated theme to Granneman 1.4; minor formatting fixes; added Important to slide on media queries before cascade; speech media type doesn't support browsers; all media types will be deprecated; updated **widows** & **orphans** compatibility chart; added & re-ordered media features

# Changelog

2017-06-13 1.5: Minor wording changes

2015-01-16 1.4: Updated compatibility chart in Media Features

2015-01-11 1.3: Renamed Media Queries to Media Features; moved much of Overview to Media Types; added new content to Overview; made it clearer which method of specifying media queries is best; minor fixes

# Changelog

2014-12-01 1.2: Improved recommendation at end of Overview

2014-08-01 1.1.2: Added more details on media features; corrected list of media types; more details on `:right` & `:left`

2014-05-15 1.1.1: Fixed minor errors

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