

CSS Media Queries: Type, Feature, Aspect Ratio, and Orientation

Overview

CSS Media Queries allow you to conditionally apply styles based on characteristics of the device or environment, such as device type, viewport features, orientation, or aspect ratio. This is essential for creating responsive designs that adapt to multiple screen sizes, formats, and usage contexts^{[1] [2]}.

1. Media Type

Media Type specifies the general category of the output device:

- `screen`: Default for computers, tablets, phones.
- `print`: For printed material and print previews.
- `speech`: For screen readers.
- `all`: Applies to all devices.

Example:

```
@media screen { ... }  
@media print { ... }
```

2. Media Features

These let you query specific device characteristics or browser attributes. Common features include:

- `width`, `min-width`, `max-width`
- `height`, `min-height`, `max-height`
- `resolution`
- `orientation`
- `aspect-ratio`, `min-aspect-ratio`, `max-aspect-ratio`

You can combine multiple features using `and`:

```
@media screen and (max-width: 768px) and (orientation: portrait) { ... }
```

3. Aspect Ratio

The **aspect-ratio** media feature describes the width-to-height ratio of the viewport. This allows for targeting devices with specific screen proportions^[3] ^[4] ^[5]:

- `aspect-ratio: w/h`: Exactly matches a given ratio (e.g., 16/9).
- `min-aspect-ratio`: Matches aspect ratios *greater than or equal to* the given value.
- `max-aspect-ratio`: Matches aspect ratios *less than or equal to* the given value.

Examples:

```
@media (aspect-ratio: 16/9) {  
  /* Styles for 16:9 screens */  
}  
  
@media (min-aspect-ratio: 5/4) {  
  /* Styles for screens at least 5:4 wide */  
}  
  
@media (max-aspect-ratio: 1/1) {  
  /* Styles for square or taller screens */  
}
```

Aspect ratio queries are especially useful for distinguishing wide (landscape) from tall (portrait) displays^[3] ^[5].

4. Orientation

The **orientation** media feature allows you to apply styles depending on whether the device is in “portrait” (height > width) or “landscape” (width > height) mode^[4] ^[5]:

- `orientation: portrait`
- `orientation: landscape`

Example:

```
@media (orientation: portrait) {  
  /* Styles for portrait orientation */  
}
```

This is particularly helpful for mobile-friendly layouts where usability changes with device rotation.

Summary Table

Media Query Part	Description	Example
Type	Device category	<code>@media print { ... }</code>
Feature	Device/browser property	<code>@media (max-width: 600px) { ... }</code>

Media Query Part	Description	Example
Aspect Ratio	Width/height relationship	@media (aspect-ratio: 4/3) { ... }
Orientation	Portrait or landscape mode	@media (orientation: landscape) { ... }

Key Points:

- Media type sets context; features add detailed conditions.
- Aspect ratio and orientation are vital for responsive adaptation, often used together for fine control.
- Combine queries with and for precise targeting.



1. https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_media_queries/Using_media_queries
2. https://www.w3schools.com/cssref/css3_pr_mediaquery.php
3. <https://developer.mozilla.org/en-US/docs/Web/CSS/@media/aspect-ratio>
4. <https://www.lambdatest.com/blog/css-media-query-for-portrait/>
5. <https://polypane.app/blog/the-complete-guide-to-css-media-queries/>