Units in CSS

CSS units define the size, spacing, and positioning of elements on a web page. Understanding units is essential for building layouts that are consistent, responsive, and easy to manage.

Two Categories of Units

1. Absolute Units

These do **not change** based on screen size or parent element. Use them for fixed-size elements (use cautiously in responsive designs).

Unit	Description
`px`	Pixels (most common absolute unit)
`pt`	Points (1/72 of an inch)
`cm`	Centimeters
`mm`	Millimeters
`in`	Inches

Example:

```
h1 {
  font-size: 24px;
}
```

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2. Relative Units

These are **responsive** and scale based on parent elements, root font size, or viewport size.

Unit	Description
`%`	Relative to parent element
`em`	Relative to parent's font size
`rem`	Relative to root font size (usually `<html>`)
`vw`	1% of viewport width
`vh`	1% of viewport height
`vmin`	1% of smaller viewport dimension
`vmax`	1% of larger viewport dimension

Commonly Used Units

`px` (Pixels)

```
p {
  margin: 10px;
}
```

Fixed spacing that does not scale with screen size.

`%` (Percentage)

```
div {
  width: 80%;
}
```

Useful for making widths or heights relative to parent elements.

`em` vs `rem`

`em` : Relative to the font size of the parent.

```
div {
  font-size: 2em; /* 2 times the parent's font size */
}
```

`rem` : Relative to the font size of the root (`html`) element.

```
html {
  font-size: 16px;
}

h1 {
  font-size: 2rem; /* 32px */
}
```

Use `rem` for consistency in modern responsive design.

`vw` and `vh`

```
.container {
  width: 100vw;   /* Full width of the viewport */
  height: 100vh;  /* Full height of the viewport */
}
```

These units are powerful for creating fullscreen layouts.

`calc()` Function

Combine different units using `calc()`:

```
section {
  width: calc(100% - 200px);
}
```

Best Practices

- Use **`rem`** for typography for consistency and scalability.
- Use **`%`**, **`vw`**, **`vh`** for responsive layouts.
- Avoid overusing **`px`** in responsive designs.

Summary

CSS units help control the size and spacing of elements. Choosing the right unit is key to making layouts flexible, scalable, and consistent across devices.