

CSS Sizing Simplified

CSS Units:

Absolute Units

1. Pixels (px):

- Pixels are fixed-size units that don't change based on other elements. One pixel equals one dot on the screen.

```
font-size: 16px;  
width: 300px;
```

2. Other Absolute Units: **Points (pt)**, **Inches (in)**, **Centimeters (cm)**

Relative Units:

1. Em (em):

- Em units are relative to the font-size of the current element.
- If an element has a font-size of 16px, then 1em equals 16px for that element.

```
.parent { font-size: 20px; }  
.child {  
  font-size: 1.2em; /* 24px (20px × 1.2) */  
  margin: 0.5em; /* 12px (24px × 0.5) */  
}
```

- Em units compound - if you nest elements with em-based font sizes, they multiply

2. Root Em (rem):

- Rem units are relative to the root element's (html) font-size, which is typically 16px by default.

```
html { font-size: 16px; }  
.element {  
  font-size: 1.5rem; /* Always 24px */  
  padding: 1rem; /* Always 16px */  
}
```

```
}
```

- Rem doesn't compound like em, making it more predictable. Use rem for consistent sizing throughout your site, especially for typography scales and component spacing.

3. Percentages (%):

- Percentages are relative to the parent element's corresponding property.

```
.container { width: 800px; }  
.child {  
  width: 50%; /* 400px */  
  height: 100%; /* 100% of parent's height */  
}
```

Viewport Units:

1. Viewport Width (vw) and Viewport Height (vh):

- These units are relative to the viewport size. 1vw = 1% of viewport width, 1vh = 1% of viewport height.

```
.hero {  
  width: 100vw; /* Full viewport width */  
  height: 100vh; /* Full viewport height */  
}  
.sidebar { width: 25vw; } /* Quarter of viewport width */
```

- Perfect for full-screen sections, hero banners, and responsive typography that scales with screen size.

2. Viewport Minimum (vmin) and Viewport Maximum (vmax):

- **vmin:** 1% of the smaller viewport dimension
- **vmax:** 1% of the larger viewport dimension

Modern Units

1. Container Query Units (cqw, cqh, cqi, cqb)

2. Character Units (ch, ex)

- **ch**: width of the "0" character in the current font
- **ex**: height of the "x" character in the current font

```
.input { width: 20ch; } /* Fits about 20 characters */
```

When to Use Which Unit:

1. Use px for:

- Borders, shadows, and decorative elements
- Small, fixed spacing
- When you need pixel-perfect control

2. Use rem for:

- Font sizes (creates consistent typography scale)
- Component spacing and layout
- When you want scalability with user preferences

3. Use em for:

- When spacing should scale with local font size
- Button padding, text margins
- Sometimes using for MediaQuery

4. Use % for:

- When size should adapt to parent container
- For e.g., Responsive images (width of image should be 100% so it can adopt its parent's container)

5. Use vw/vh for:

- Elements that should scale with viewport

- Responsive typography
- Full-screen sections (100vw)

6. Use vmin/vmax for:

- Responsive squares or circles
 - Maintaining aspect ratios
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