# Responsive Design

- **Typography**: It is useful to scale based on **vw** → 1 vw = 1% of width of viewport
  - ↳ must make in a relative unit for dynamic sizing:

```
font-size: clamp(1rem, .75rem + 1.5vw, 2rem)
```

clamp allows for a pre-defined range

- **Images**: Text on web auto-wraps w/ overflow. Images are different → If wider will result in a scroll bar showing.
  - ↳ Can make sure elements rendered never at a size wider than container:

```
img {
    max-width: 100%
    block-size: auto
}
```

- block-size: auto ensures the img/video, etc aspect ratio is maintained.
- Object fit sets how the content of img / similar elements should be resized to fit their container
  - ↳ contain: browser preserves aspect ratio, even if it means leave empty space
  - ↳ cover: browser preserves aspect ratio, even if it means cropping at the top/bottom
    - ↳ object-position is useful to modify crop behavior

- It is optimal to understand <img> tags have many optimizations:
  - lazy loading
  - fetch priority
  - image decoding
  - background-image
  - srcset attribute + pixel density descriptor

- The html <picture> element can be used to provide new images based on vw
  - ↳ this is good if smaller images don't look good, you can make a cropped version instead

- For non-photographic imagery, you have a choice between PNGs or SVG
  - ↳ PNGs + (JPGs, WebP, AVIF) are bitmap images. Stored in Pixels
  - ↳ SVGs is drawing instructions → scaleable by default

# Responsive Web Design (cont)

- embedding SVGs means 1-less network request the browser must do
- SVGs are ideal way to represent icons
  - ↳ can put as a background-image, use background-position, etc.
  - SVGs embedded in HTML can be targeted by the stylesheet
  - CSS filter property is powerful for applying effects

- Theming: Some browsers use a <meta> tag theme-color
  - ↳ tag in head allows page to render faster
  - use css-vars and @media(prefers-color-scheme: dark) to easily manipulate page themes
  - can hook into forms to style i.e accent-color

```
<meta name="theme-color" content="#00D494">
```

**Note:** It feels a little strange to put styling information like this in HTML rather than CSS, but this allows the browser to update its interface as soon as the page is loading rather than waiting for the CSS.