Responsive Web Design

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Goal

Learn how to use media queries, relative units, and flexible sizes to style responsive web pages.

Agenda

- Background 10 min
- Exploration 5 min
- Media Queries 5 min
- Responsive Units 15 min
- Layout Demo 20 min
- Playtime 10+ min

O2-UK
21:25
Main Page - Wikipedia, the free encyclopedia
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main page
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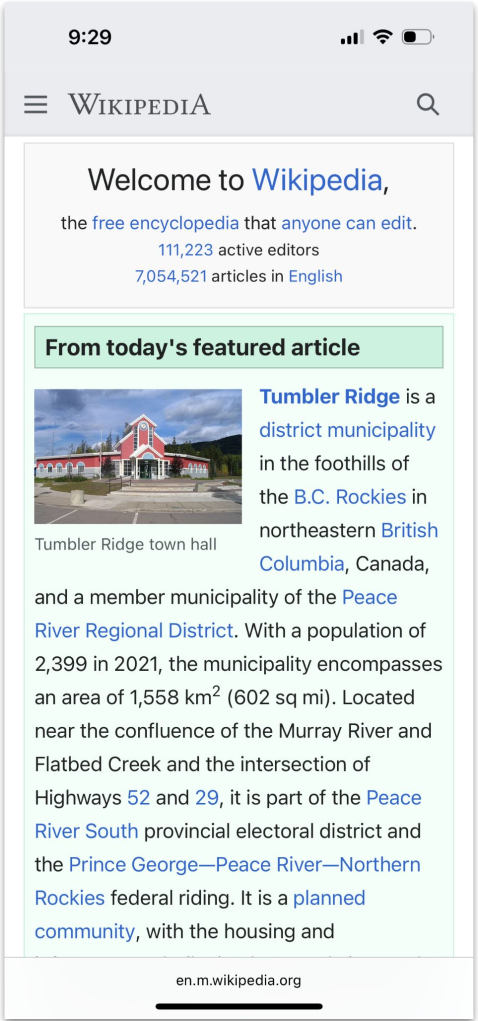
Today's featured article
In the news

Elagabalus was a Roman emperor of the Severan dynasty who reigned from 218 to 222. Born in Syria, in his early youth he served as a priest of the god El-Gabal at his hometown Emesa. In 217, the emperor Caracalla was murdered and replaced by his Praetorian prefect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From today's featured article

Tumbler Ridge town hall

Tumbler Ridge is a district municipality in the foothills of the B.C. Rockies in northeastern British Columbia, Canada, and a member municipality of the Peace River Regional District. With a population of 2,399 in 2021, the municipality encompasses an area of 1,558 km^2 (602 sq mi). Located near the confluence of the Murray River and Flatbed Creek and the intersection of Highways 52 and 29, it is part of the Peace River South provincial electoral district and the Prince George—Peace River—Northern Rockies federal riding. It is a planned community, with the housing and

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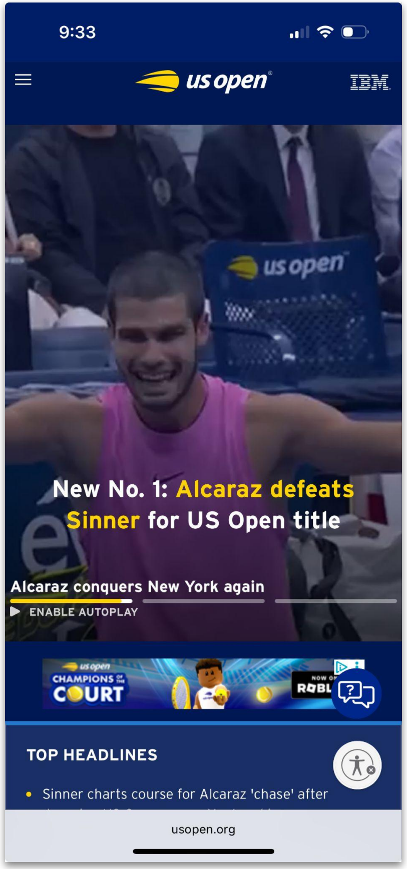
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us open IBM

New No. 1: Alcaraz defeats Sinner for US Open title

Alcaraz conquers New York again

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TOP HEADLINES

- Sinner charts course for Alcaraz 'chase' after

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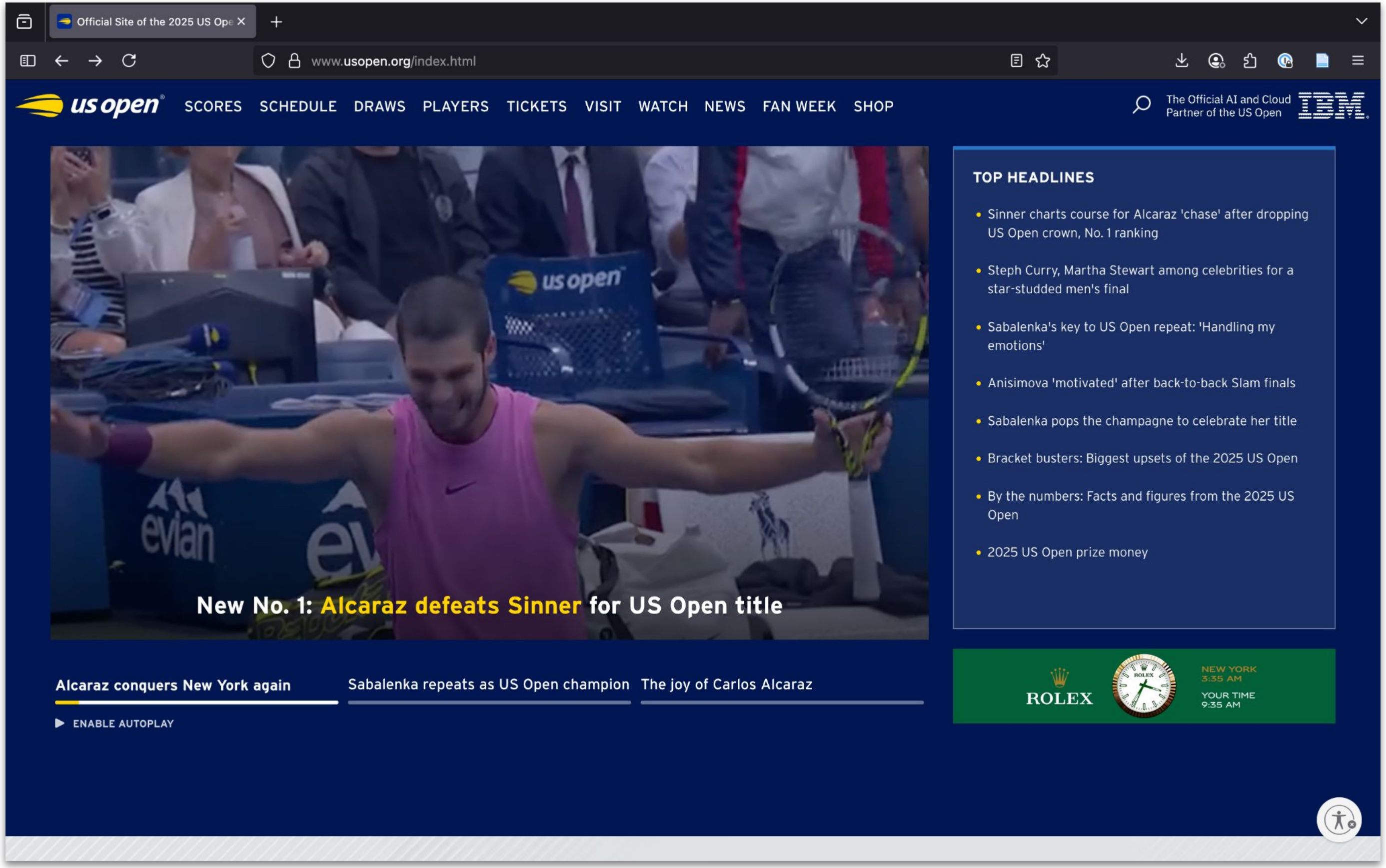
Official Site of the 2025 US Ope

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New No. 1: Alcaraz defeats Sinner for US Open title

TOP HEADLINES

- Sinner charts course for Alcaraz 'chase' after dropping US Open crown, No. 1 ranking
- Steph Curry, Martha Stewart among celebrities for a star-studded men's final
- Sabalenka's key to US Open repeat: 'Handling my emotions'
- Anisimova 'motivated' after back-to-back Slam finals
- Sabalenka pops the champagne to celebrate her title
- Bracket busters: Biggest upsets of the 2025 US Open
- By the numbers: Facts and figures from the 2025 US Open
- 2025 US Open prize money

Alcaraz conquers New York again | Sabalenka repeats as US Open champion | The joy of Carlos Alcaraz

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3 Magic CSS tools

Media Queries

Responsive Units

Flexible Sizes

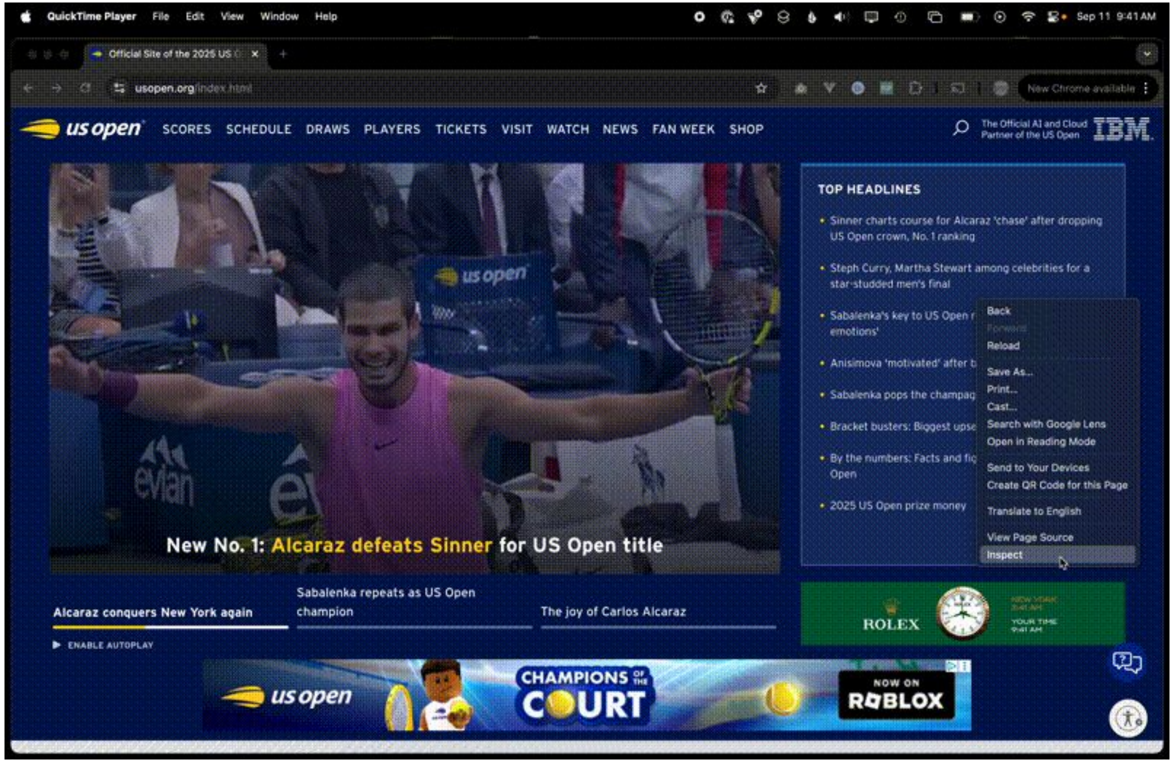
Exploration

Choose any webpage you frequent.

- Open up the dev tools
- Change the width of your view
- Observe what happens
- Note the pixel value of the width

Be ready to share...

Are there some pixel values where major **"breaks"** in the design happen?



New No. 1: Alcaraz defeats Sinner for US Open title

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Alcaraz conquers New York again

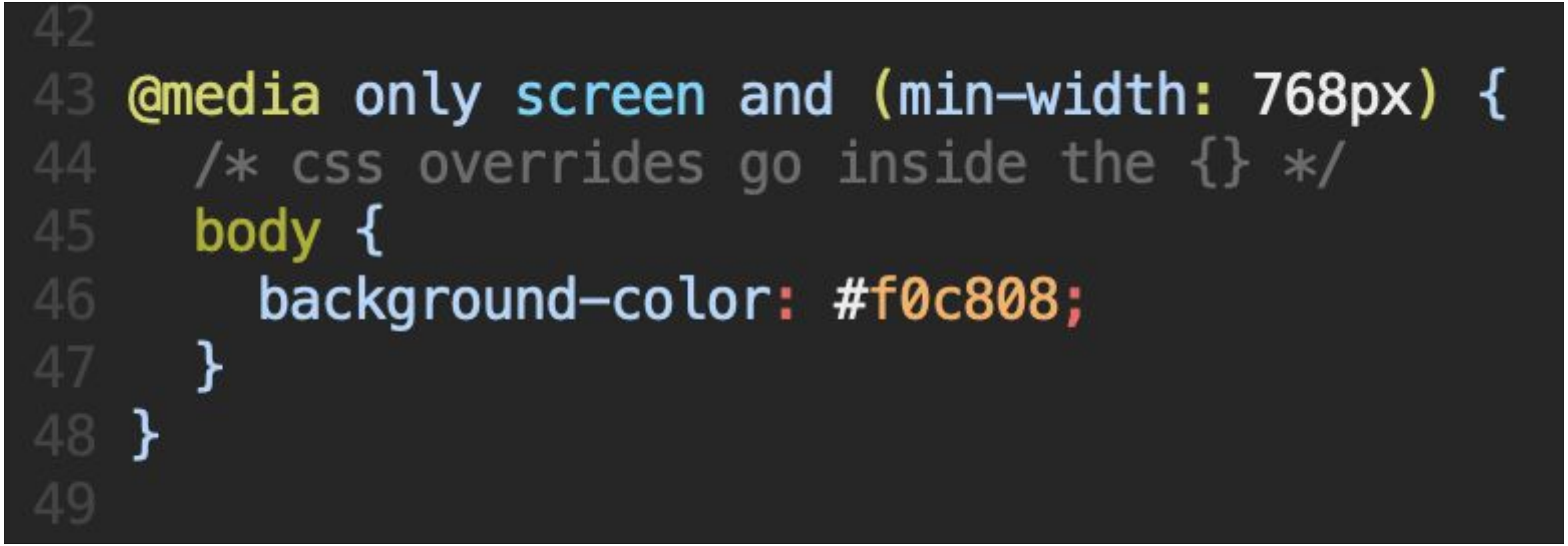
Sabalenka repeats as US Open champion

The joy of Carlos Alcaraz

Breakpoints

How?

CSS Media Queries



```css

@media only screen and (min-width: 768px) {
  /* css overrides go inside the {} */
  body {
    background-color: #f0c808;
  }
}

```

Demo

Responsive Units

Responsive Units for Type

We want to get away from a reliance on using pixel values as our units.

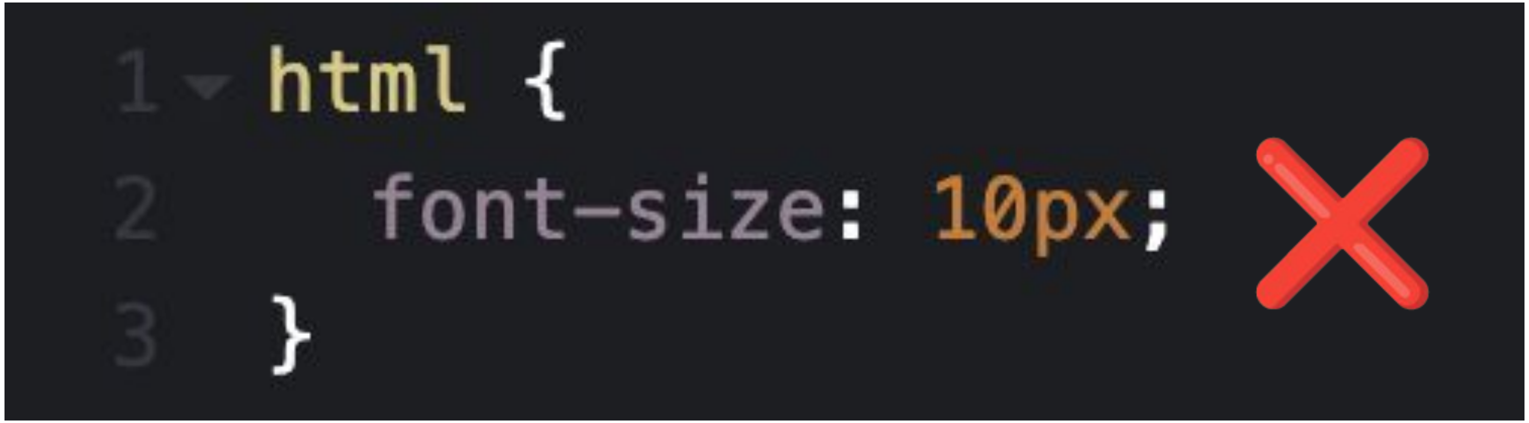
Instead we should use responsive units:

- **em**, Relative to the font-size of the element
  - font-size: 2em; means 2 times the size of the current parents font
- **rem**, Relative to font-size of the root element
  - font-size: 2rem; size will be 32px if html font-size is 16px
- **%,** defines the size as a percent of the parent
  - font-size: 50%; size will be 8px, 16 * 50% = 8

Try it out

Design typography hierarchy as **proportional**

Don't define a base pixel size

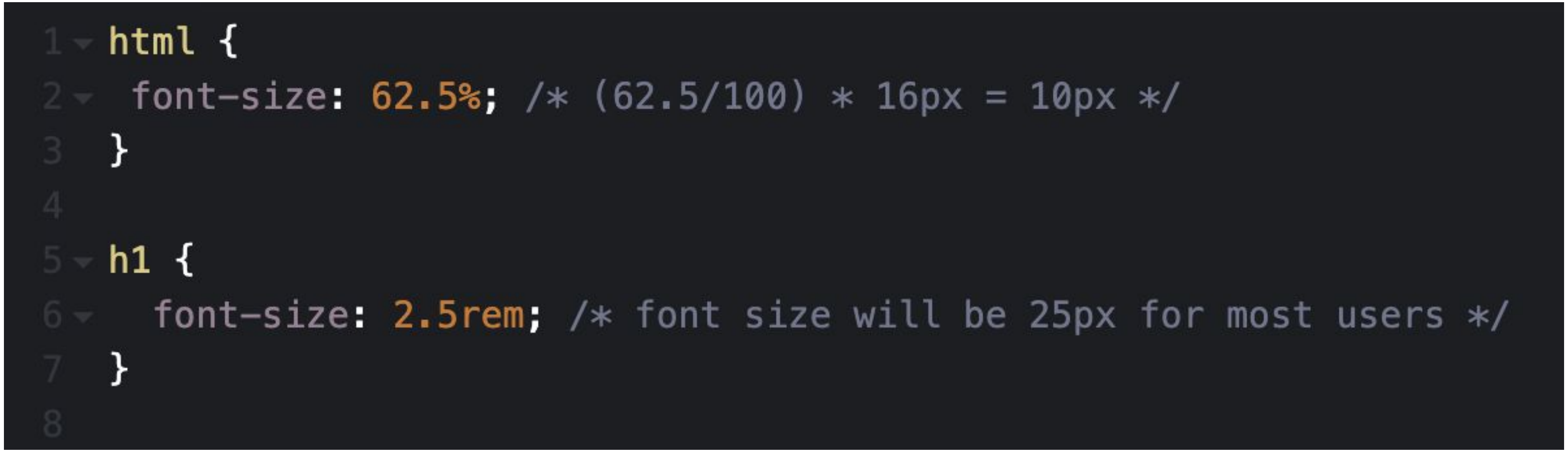


```css
html {
    font-size: 10px;
}
```

Some people change set their browsers default size on purpose because of visual preferences.

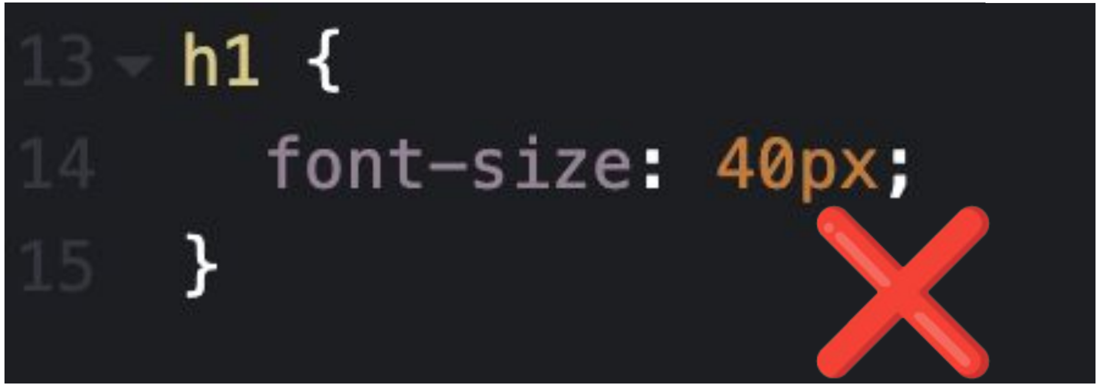
Do this ignores their preference and makes your site less accessible.

Want easy pixel values? Set base font-size as a %!



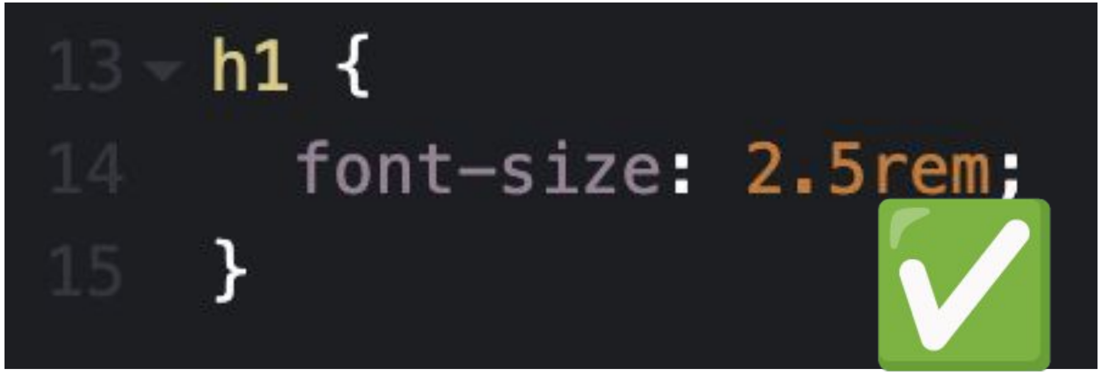
```css
html {
 font-size: 62.5%; /* (62.5/100) * 16px = 10px */
}

h1 {
  font-size: 2.5rem; /* font size will be 25px for most users */
}

```

Advice: Use rem for all font sizing!



```
h1 {
  font-size: 40px;
}
```

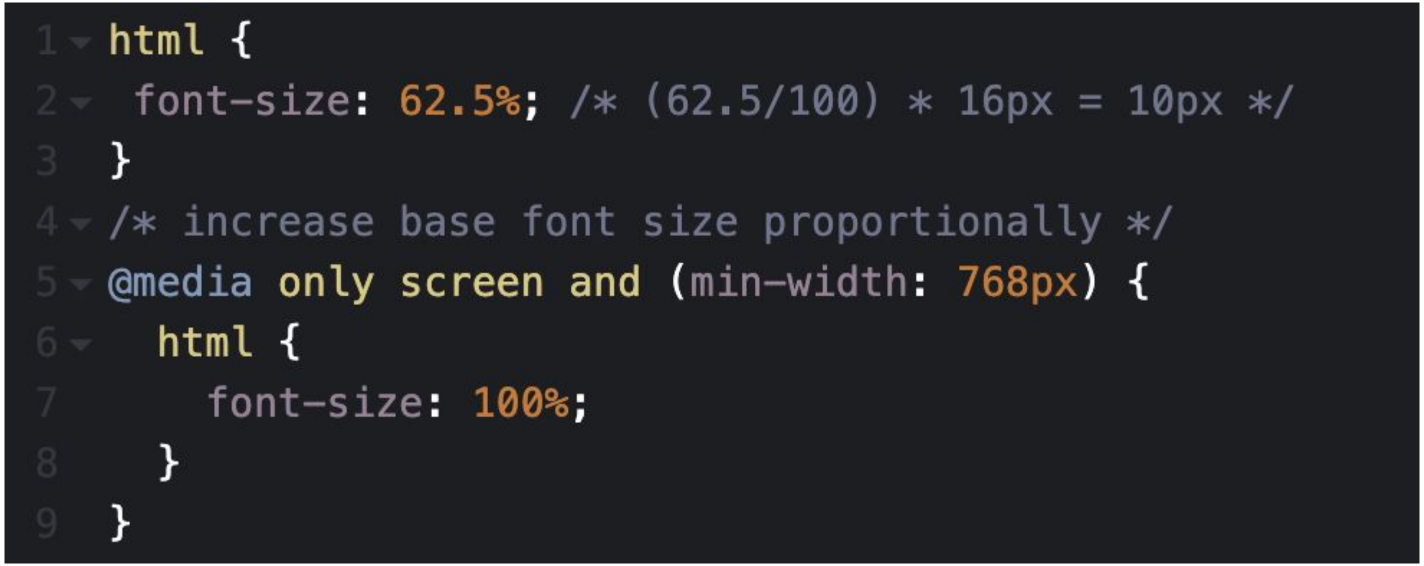
❌



```
h1 {
  font-size: 2.5rem;
}
```

✅

An Option: Proportional Changes!



```
html {
 font-size: 62.5%; /* (62.5/100) * 16px = 10px */
}
/* increase base font size proportionally */
@media only screen and (min-width: 768px) {
  html {
    font-size: 100%;
  }
}
```

Everything sized with rem will increase in response to the base font.

BUT, so will other sizes defined as rems.

My Practice

Don't change html font-size, keep the default 16px.

I always use rems as my text units, and often for margins too.

If I want text to be bigger or smaller at different breakpoints, I just change the rem value that I'm assigning to match what I think looks good.

Most of time this means making text smaller for desktops.

Responsive Units for Sizing

Again, don't size elements as pixel values. This is too static.

Instead we should use responsive units:

- **%,** defines the size as a percent of the parent.
    - width: 50%; the elements width will be 50% of the parents width.
- **vw/vh**, view width and view height come from the viewport size.
    - width: 50vw; the elements width will be 50% of the viewport.

Even use rems!

- **rem**, Relative to font-size of the root element
    - margin: 2rem; margin will be 32px if html font-size is 16px

Try it out

Dynamic View Heights

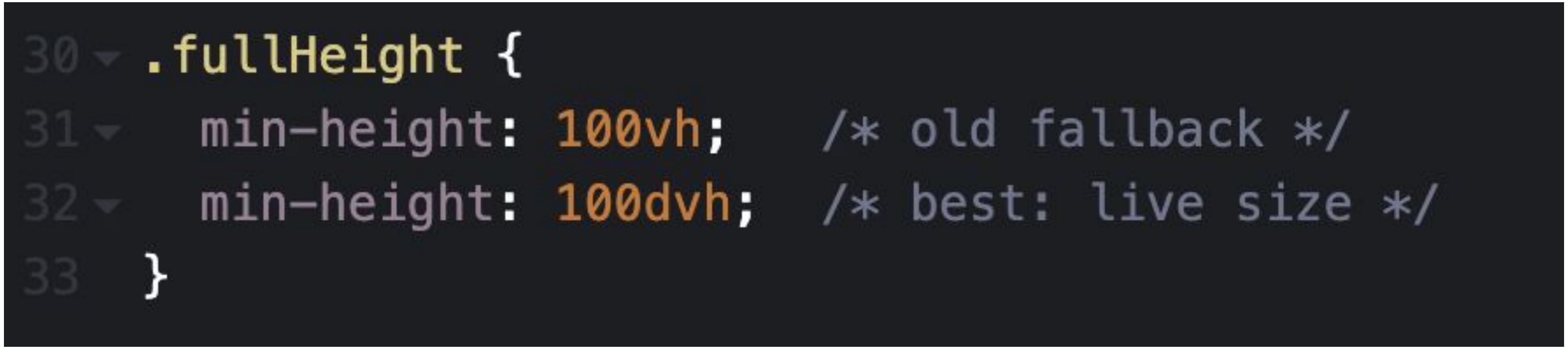
On mobile **vh** often ignores the browser bars, so its not accurate and could leave gaps.

New mobile-friendly vh units solve this.

- **svh** = small viewport height
    - the minimum height (with bars visible).
- **lvh** = large viewport height
    - the maximum height (bars collapsed).
- **dvh** = dynamic viewport height
    - the current height (updates as bars show/hide).

Advice

Use new dvh unit but keep a 100vh fall back.



```css
.fullHeight {
  min-height: 100vh;   /* old fallback */
  min-height: 100dvh;  /* best: live size */
}
```

Flexible Sizes

More Control of Sizing

All these responsive units are great for flexible sizing, but sometimes we want to control the maximum and minimum sizes of an element.

- max-width, sets the maximum size that an element can be.
  - max-width: 500px, element never gets bigger than 500px.
- min-width, sets the minimum size that an element can be.
  - min-width: 500px, element never gets smaller than 500px.

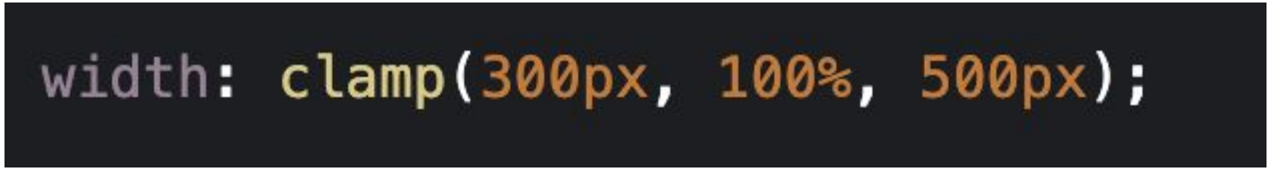
Try it Out

Clamp

Newish CSS function, picks a value that’s never smaller than min, never larger than max, and otherwise uses your preferred value.

```
property: clamp(min, preferred, max);
```

- One line for fluid values with hard stops (no media queries).
- You can mix units (px, rem, vw, etc.).



```
width: clamp(300px, 100%, 500px);
```

[Fluid Typography with Clamp]

Responsive Layout

Putting all these tools together.

Mobile First Layout

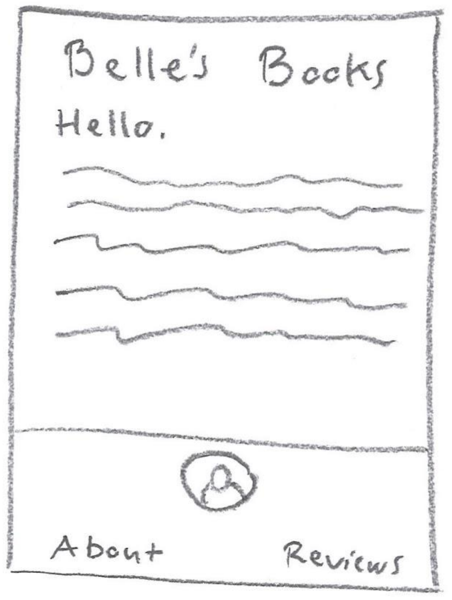
Start by styling your mobile view. Why?

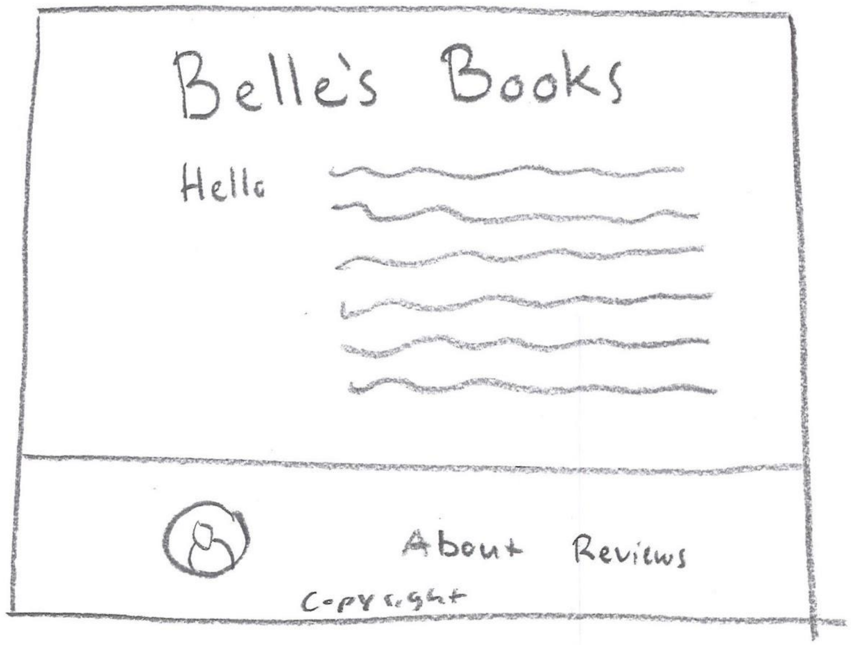
- Start Simple, your mobile site should be the most simple to navigate and read.
- You create more rules as screen size increases, you don't have to replace rules for smaller devices.
- Your small screen styles are in your regular screen CSS and then as the screen gets larger, you add new rules or override old rules.

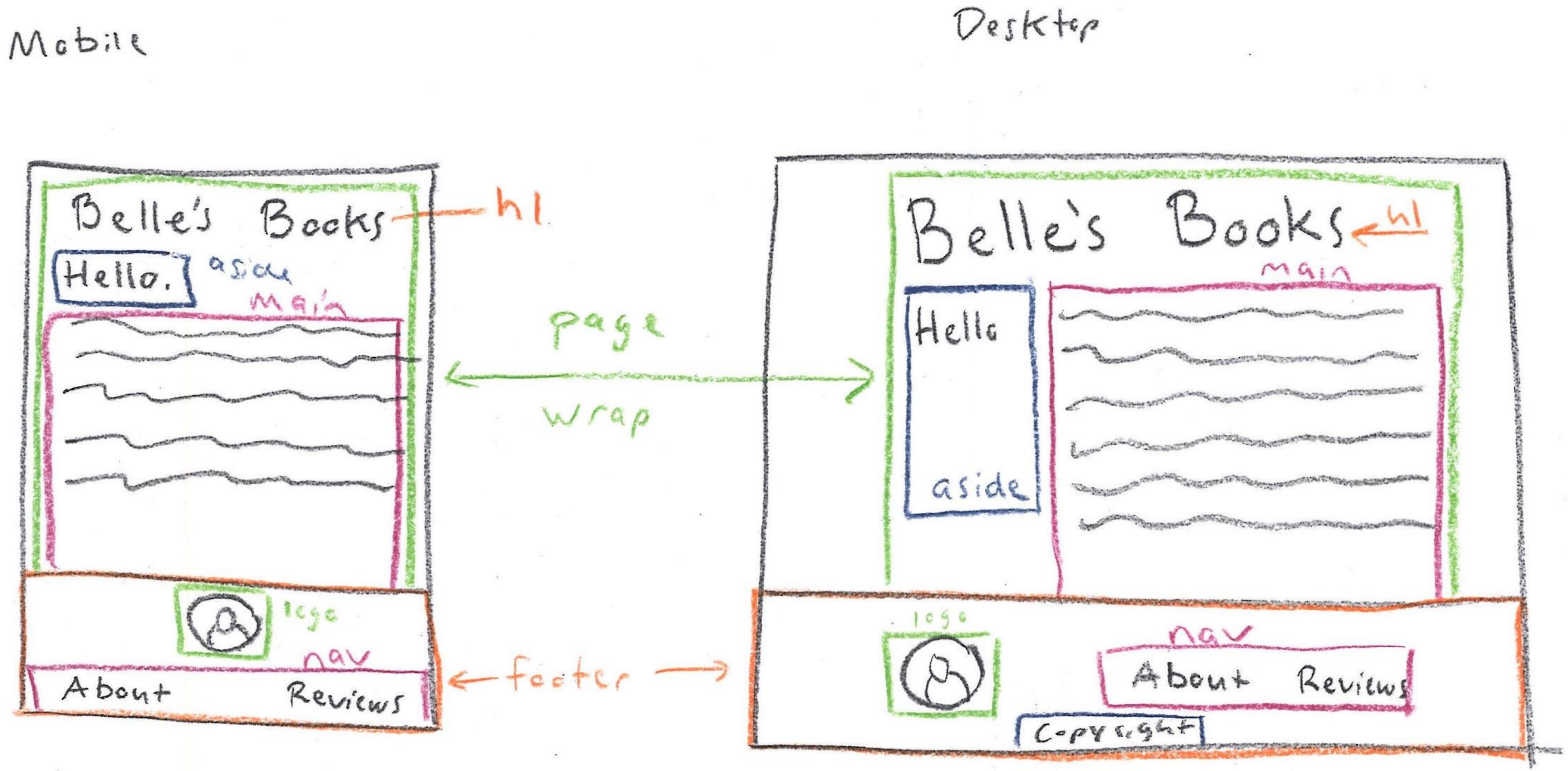
Wireframe for mobile and desktop designs.

Mobile

Desktop



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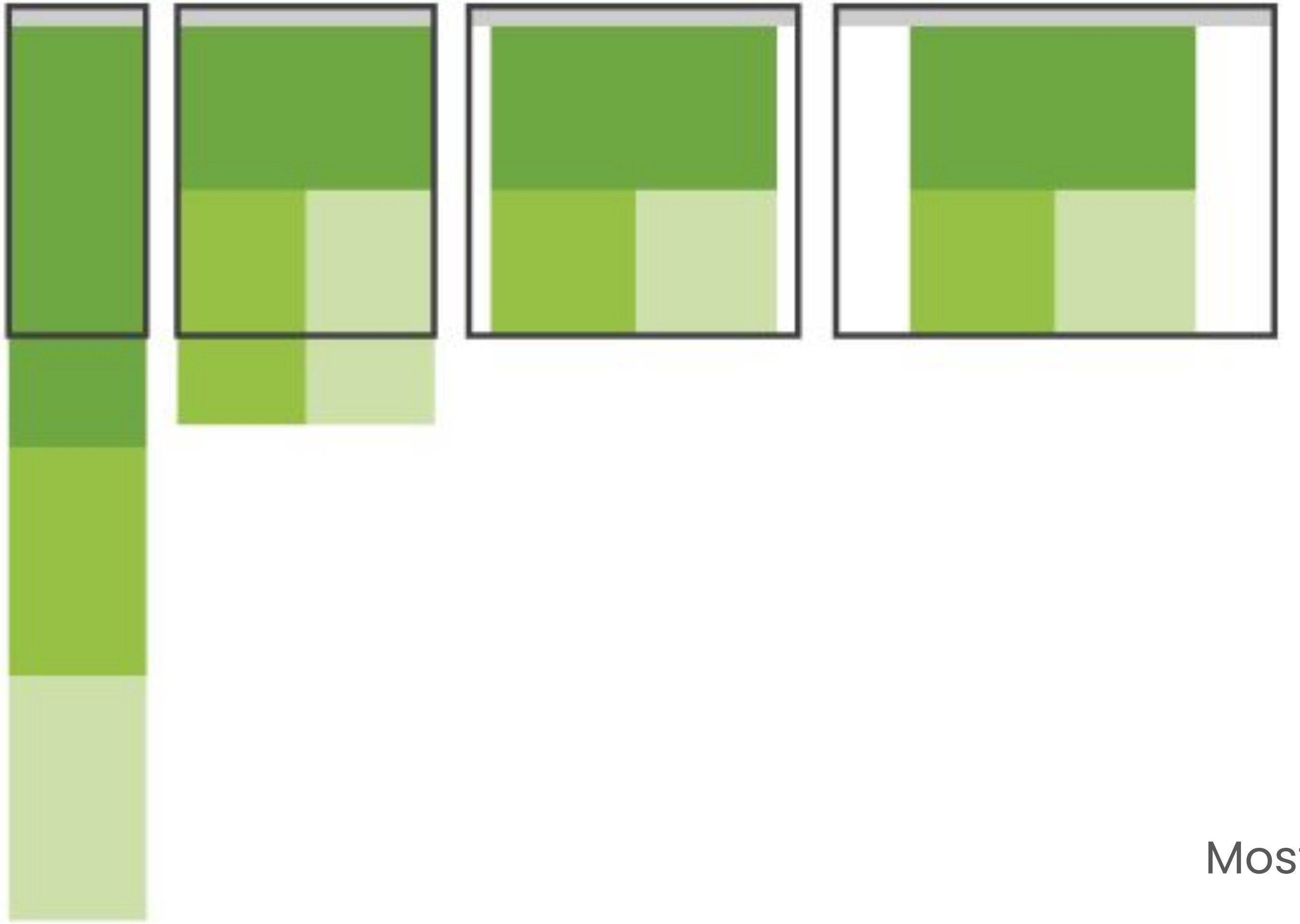
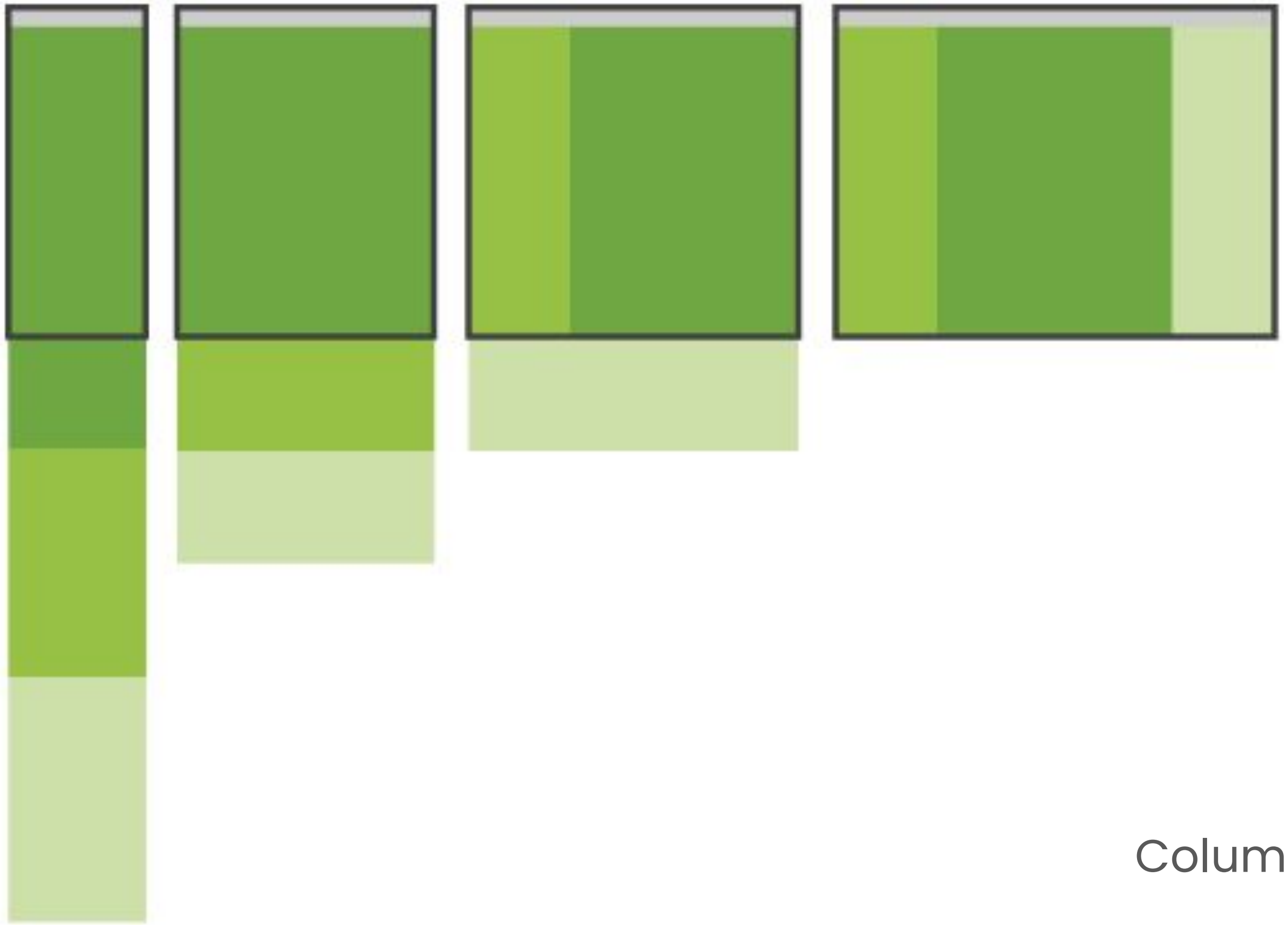
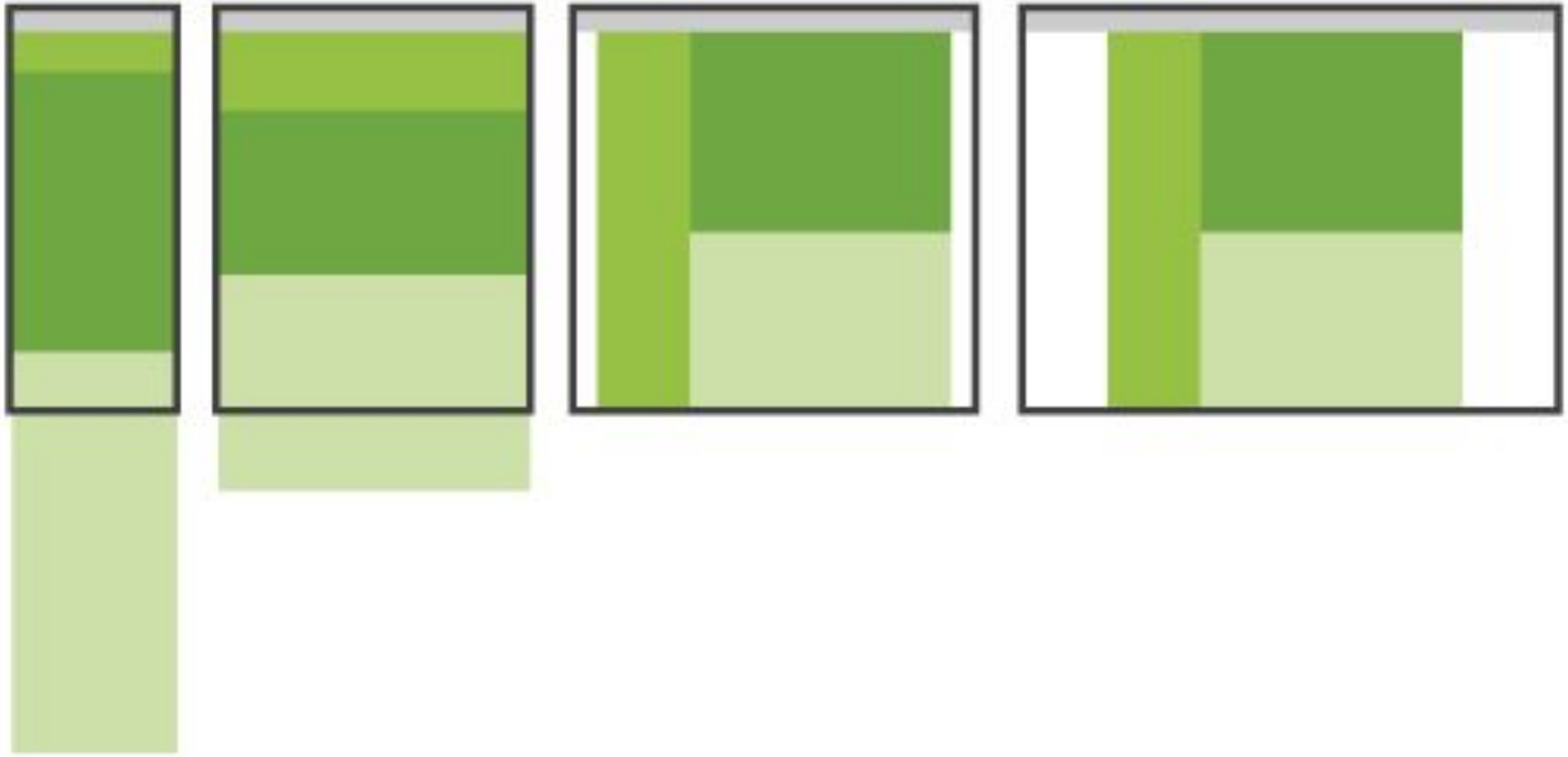


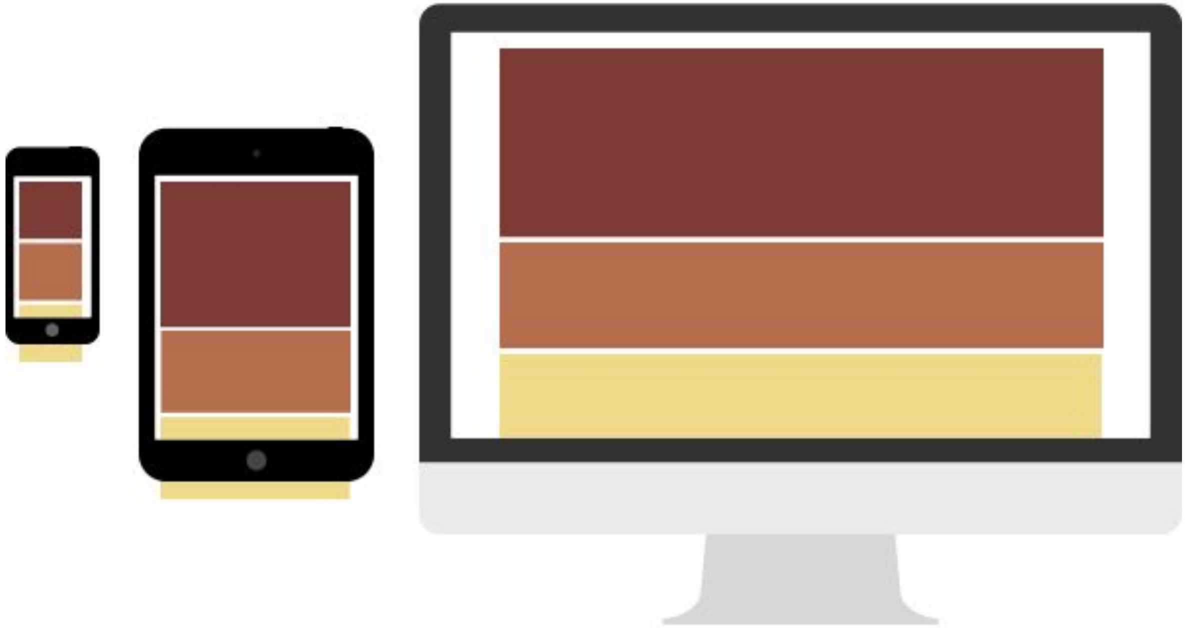
Mostly Fluid



Column Drop



Layout Shifter



Tiny Tweaks

Two Examples to Explore

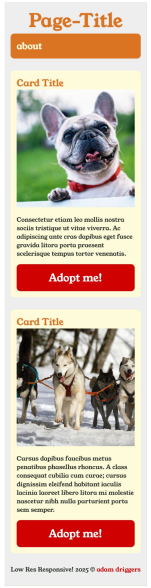
Choose an example, look at it at different device sizes, look over the code.

[Two Column Shift]

[Code]

[Fluid Layout with CSS Grid]

[Code]



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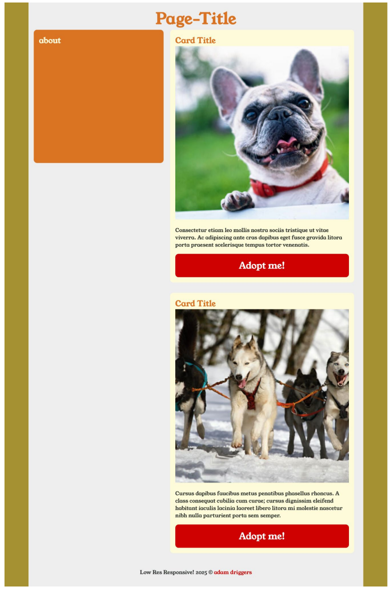

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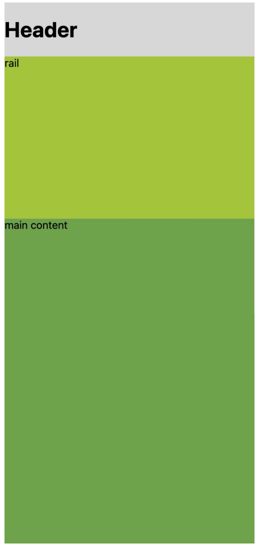

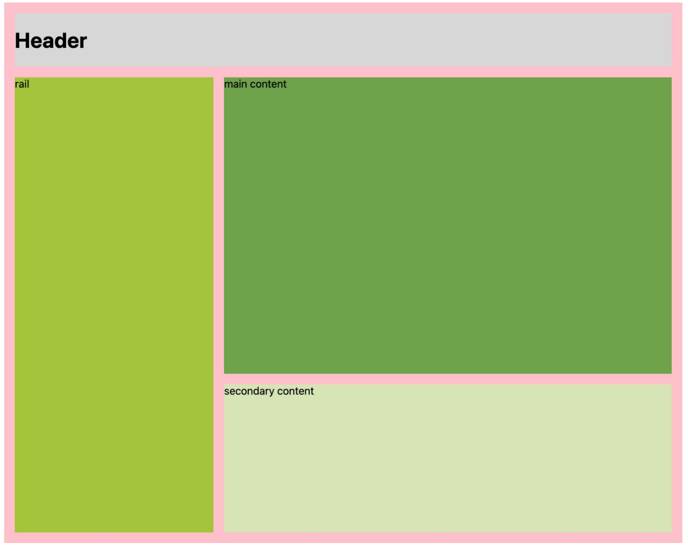

Questions?