

Class 11: Responsive Breakpoints & Visual Design Principles

- Responsive Design
- Responsive Breakpoints
- Visual Design Principles

Copyright 2026, Kyle J. Harms

Review: Responsive Design

A design that **responds** to the needs of users and the devices they are using.

Your website's design should **respond** to the user's screen *width*.

Use the available screen space to **optimize** content usability.

Don't design multiple websites (i.e. mobile and desktop) or for specific devices (i.e. iPhone 17).

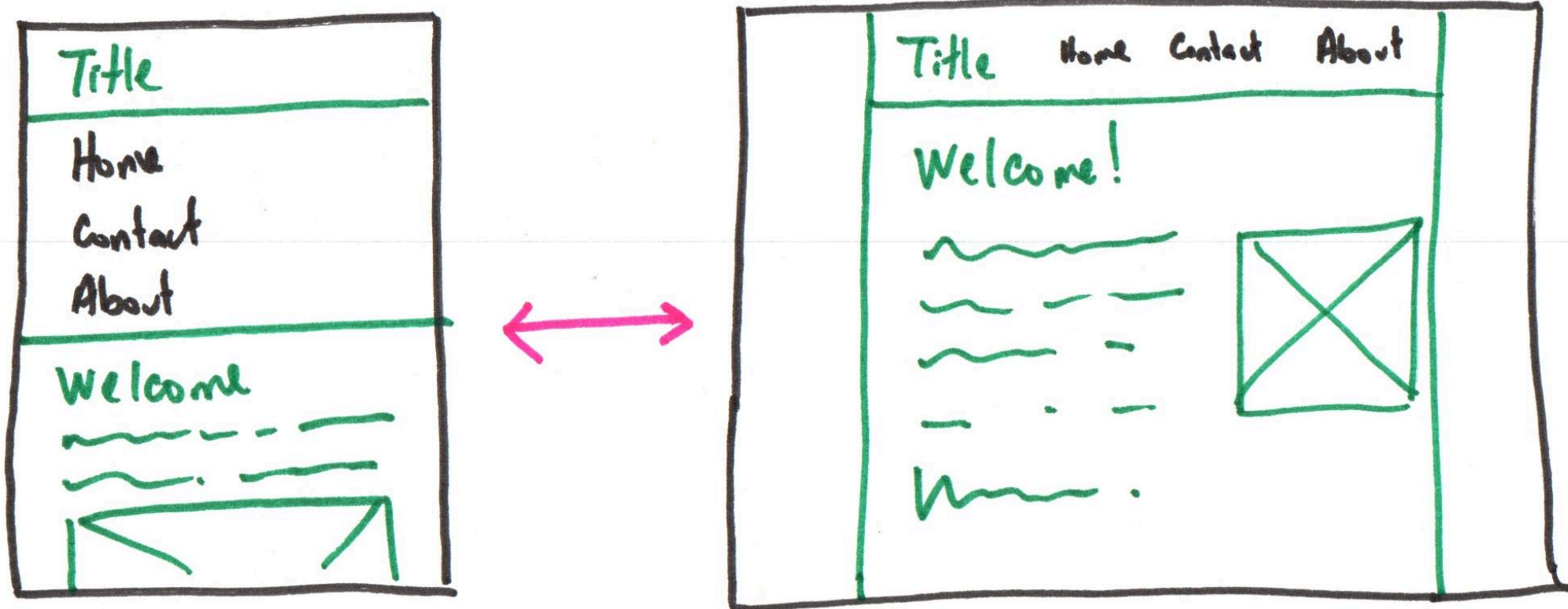


Responsive Design Considerations

Coding Responsive Design

1. **Design (sketch) your site for *both* narrow *and* wide screens.**
2. Structure your content with HTML.
3. Style your site's *theme* in CSS.
4. Use **responsive methods** to implement the site's layout in CSS.
 - relative dimensions (e.g. `width: 100%`)
 - min/max widths (e.g. `min-width: 375px; max-width: 800px`)
 - flexbox (e.g. `flex-direction: row`)
 - media queries (Next class)
5. Test responsiveness by **resizing the *width* of the browser's window.**

Example: Narrow and Wide Sketch



Readability

Ensure content is legible and easily read by the audience.

Usability:

- Avoid small fonts
16 point is a good choice (nothing smaller than 12pt).
- Lines of text should be between 50-80 characters.
(~5 or 6 inches)

```
p {  
  font-size: 16px;  
  
  width: 100%;  
  min-width: 375px;  
  max-width: 600px; /* About 6 inches */  
}
```

1 inch $\approx$ 96px

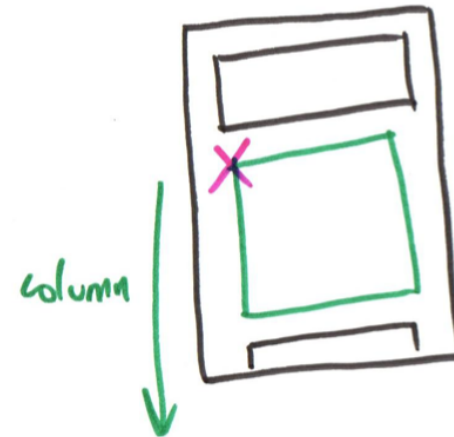
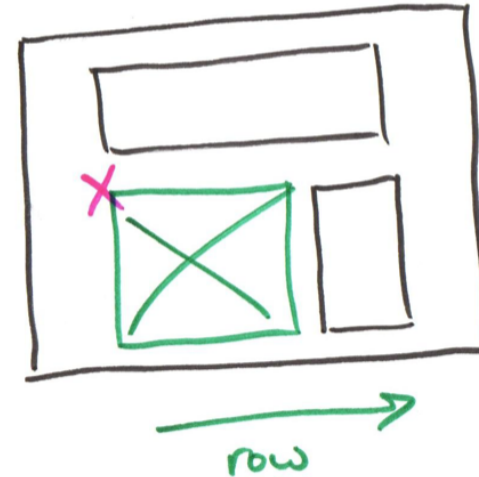
Order

Usability: Present content in the order that best meets your audience's goals.

Most important content should be **first** (often top-left).

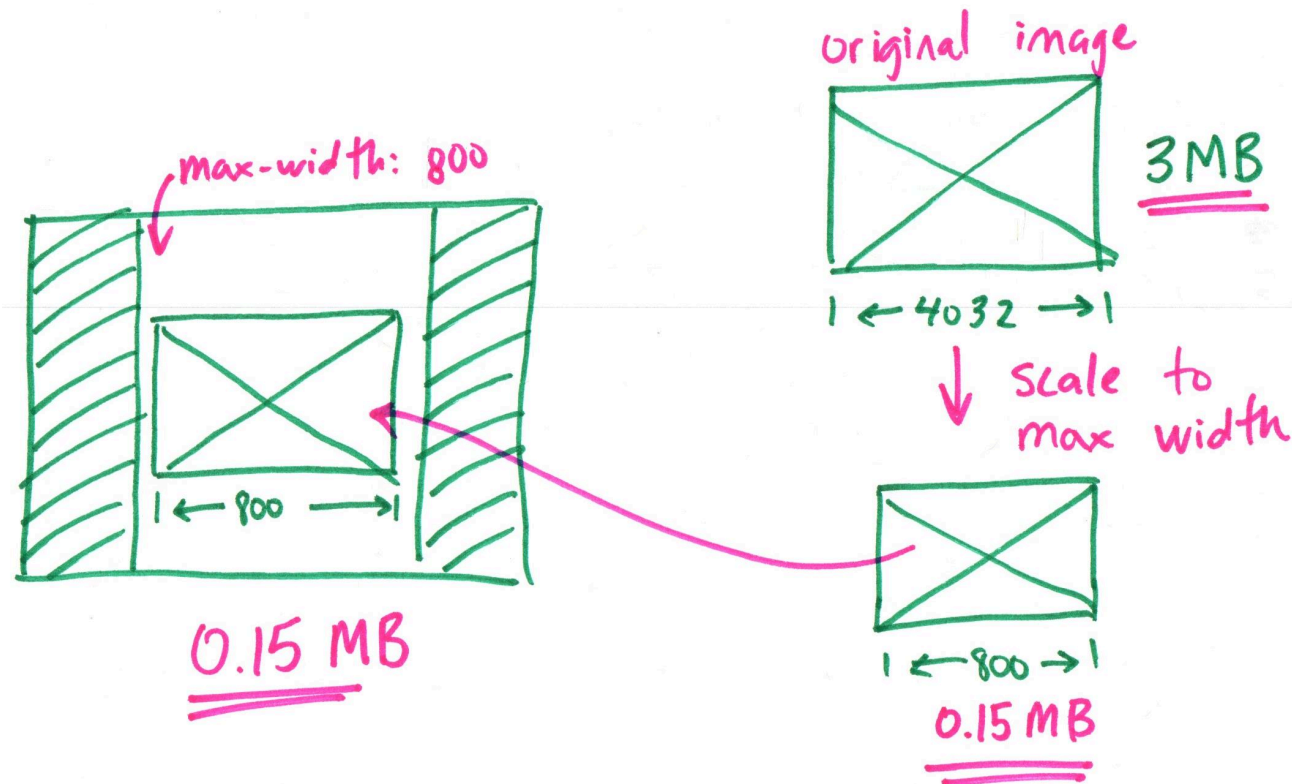
Tip: Re-Order Flexbox Children

```
order: 1; /* move child first */  
order: 2; /* move child second */  
flex-direction: row-reverse;  
flex-direction: column-reverse;
```



Bandwidth – Scale Raster Image Files

Shrink raster image files to **twice** the **maximum** sized needed for the design.

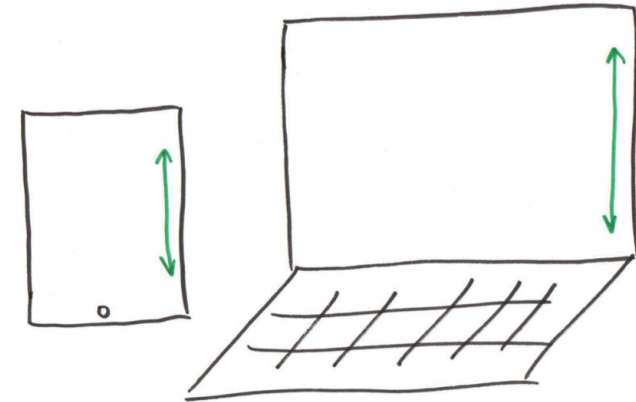


Responsive Design

Responsive Breakpoints

How to “Think” About Responsive Design

- Width is *often* the limiting factor in our designs
 - Websites *typically* scroll vertically.
 - We have as much vertical space as we need!
- Design to **optimize content usability** for the available **width**.
(not the **device** or screen **height**)



Optimizing Content Usability – Does it Fit?

Sizing content in responsive design:

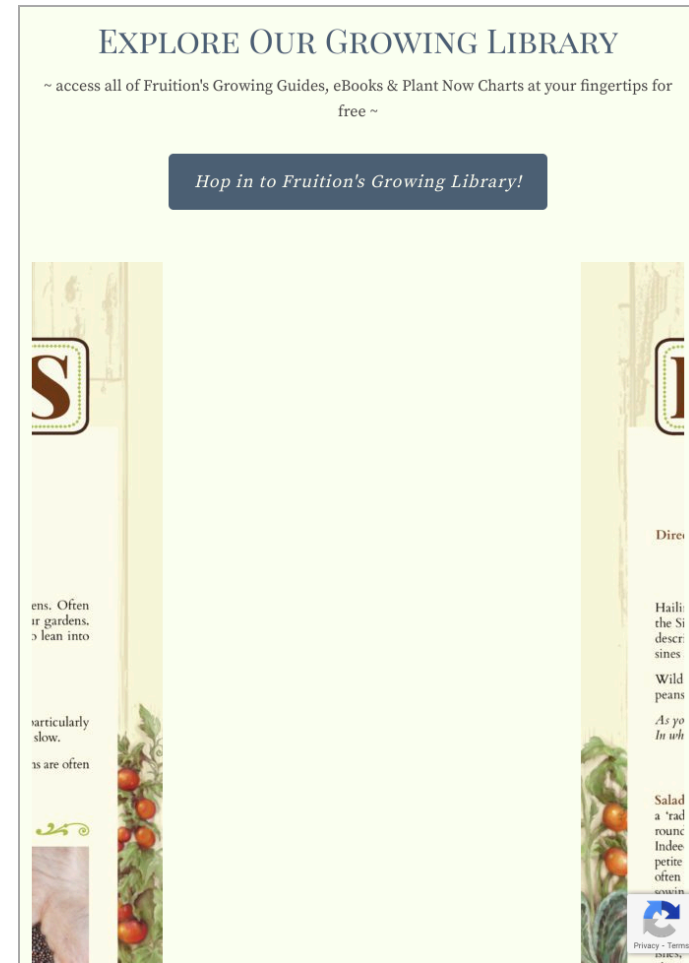
Goal: Keep content **readable** and **usable**.

Ask yourself:

“Is the content usable at this **width**?”

Not too big, not too small.

Tip: If the screen width doesn't lend to usable content, change the arrangement of the content so that it is usable.



Optimizing Content Usability – Does it Fit?

Sizing content in responsive design:

Goal: Keep content **readable** and **usable**.

Ask yourself:

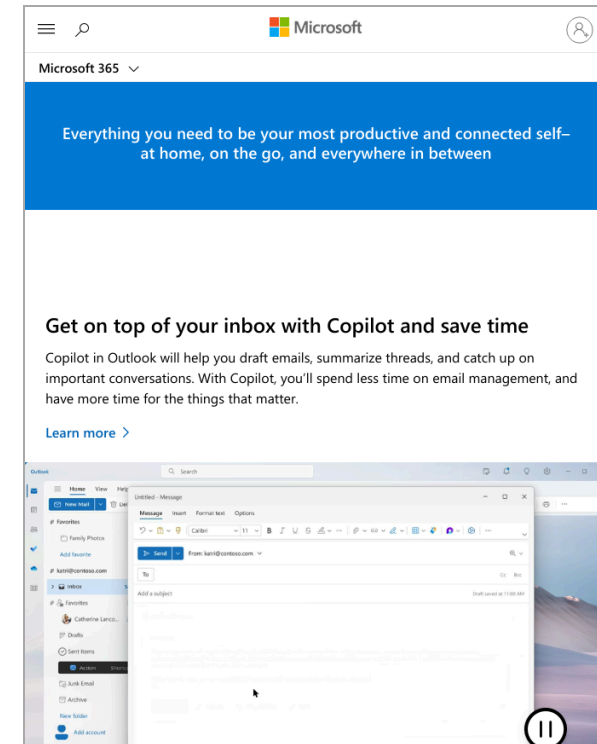
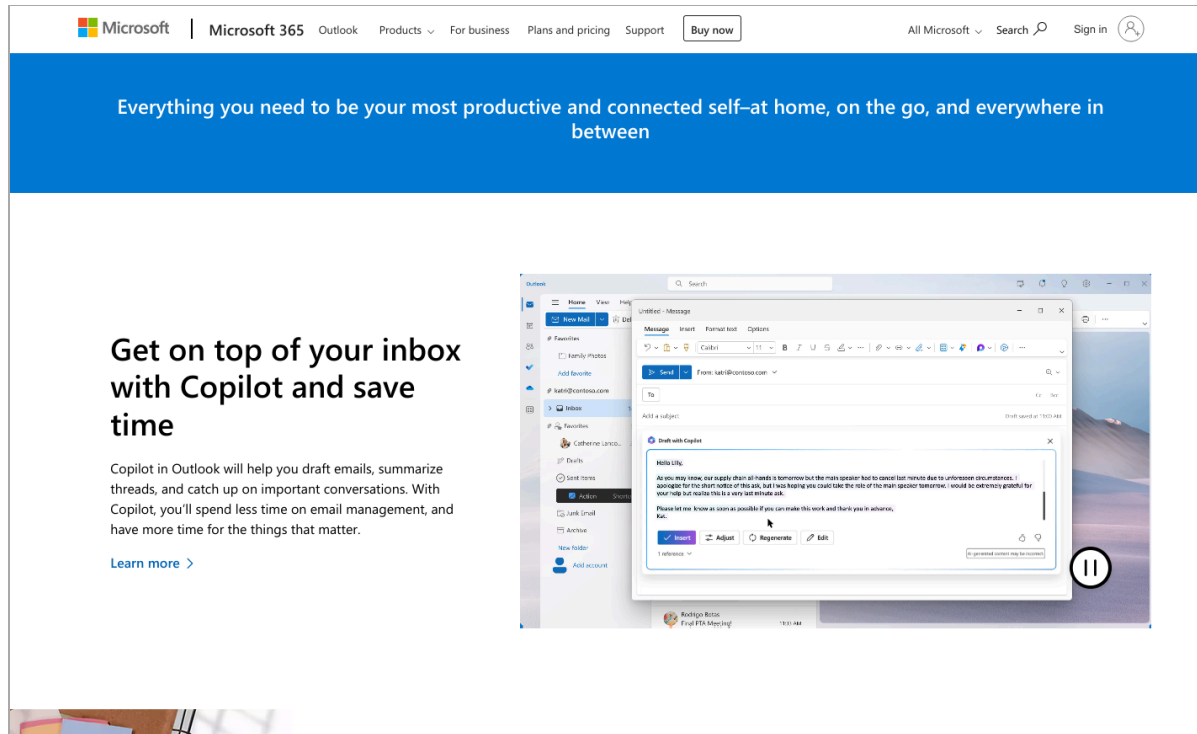
“Is the content usable at this **width**?”

Not too big, not too small.

Tip: If the screen width doesn't lend to usable content, change the arrangement of the content so that it is usable.



Demo: Responsive Breakpoints



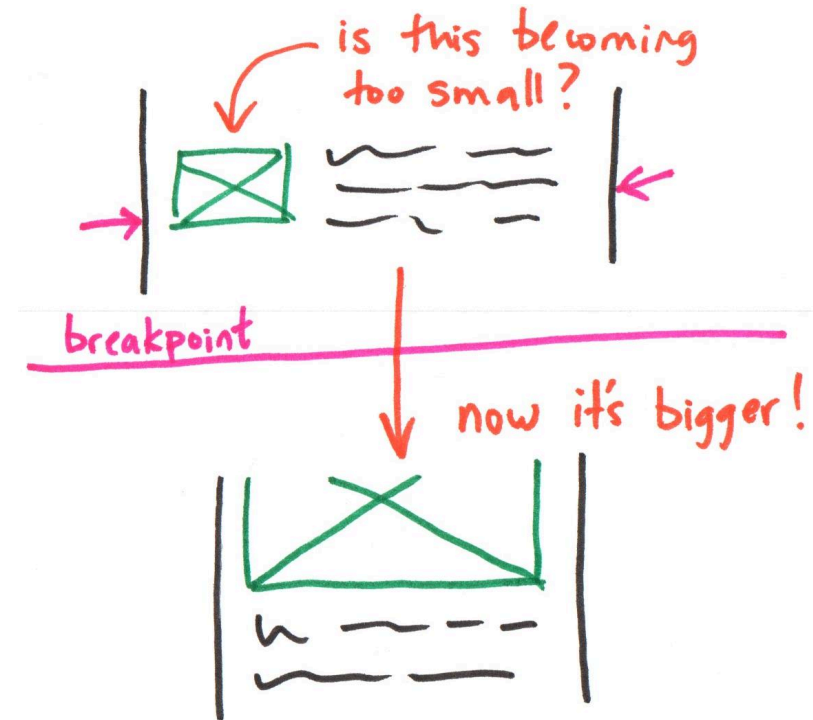
Always usable content – design adapts to the available space.

Responsive Breakpoint

The screen **width** when the design needs to adapt because the content will become **unusable**.

Is the text too narrow or too wide to easily read?

Is the image becoming too small or too big?



Activity: Responsive Design & Usable Content

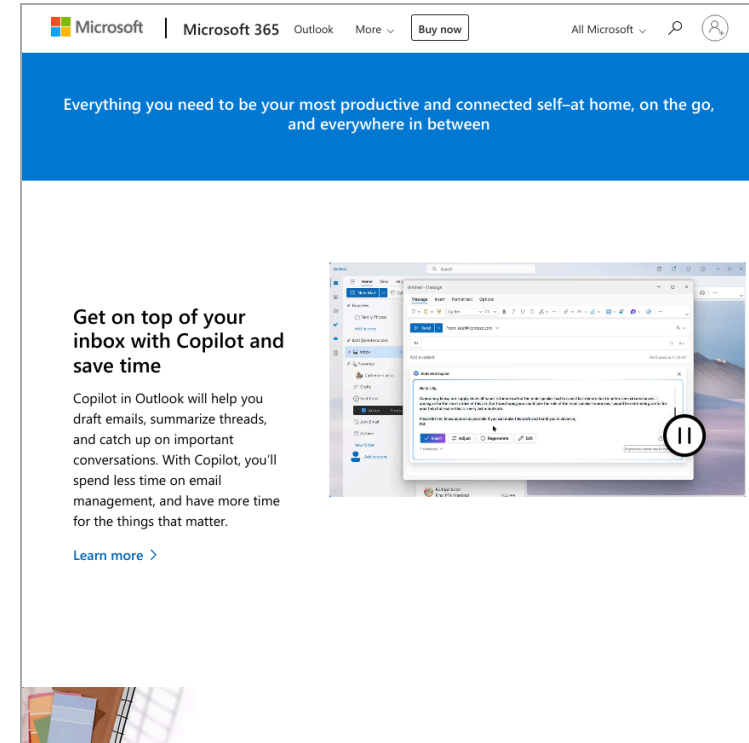
Working with a peer:

1. Open the **activity** website.
2. **Slowly** resize the browser window from wide to narrow.
3. Discuss with your partner:
 - At what point does the content **begin** to become unusable?
 - Use the **Developer Tools**, identify the **width** of the browser window at this point. Document each **breakpoint** on your **handout**:
 - **Problem** with the content
 - **Width** of the browser window
 - **Remedy** to make the content usable

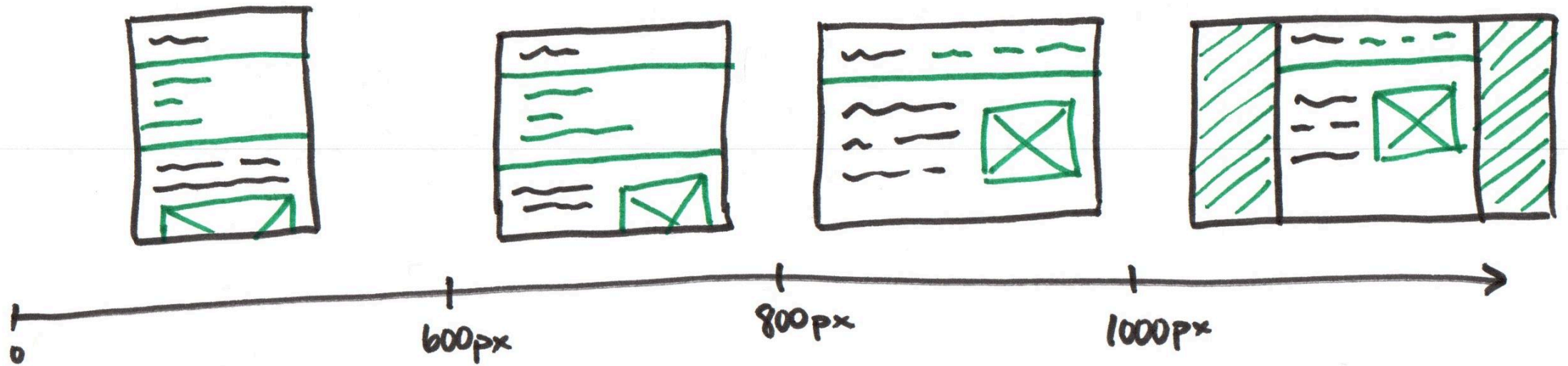
Review: Responsive Breakpoint

The “moment” at which a website’s content and design will adapt to provide the best possible user experience.

Tip: When the content is no longer usable, you need a **breakpoint** to adapt the design.



Example: Responsive Breakpoints



Note: These are just example breakpoints. Let your content determine your site's breakpoints.

Selecting Responsive Breakpoints

There are no “standard” mobile or desktop breakpoints.

Let your content determine your site’s breakpoints.

Keep the content a usable width – not too small, not too big.

→ If the content gets too small, you probably need a breakpoint.

→ If the content gets too big, you probably need a breakpoint.

Discussion: Content Usability Critique – Narrow

Is the content usable?

Critique the usability of this site's content.

New York, NY Tuesday, April 15th Overcast  58°F Precipitation: 100% Humidity: 97% Wind: 4 mph SW Pollen Count: 36			
Today		68° 36°	Pollen 36
Wednesday		50° 39°	Pollen 36
Thursday		55° 39°	Pollen 36
Friday		54° 43°	Pollen 36
Saturday		64° 46°	Pollen 36
Sunday		64° 50°	Pollen 36
Monday		61° 50°	Pollen 36

Discussion: Content Usability Critique – Wide

Critique the usability of this site's content.

New York, NY Tuesday, April 15th Overcast  58°F Precipitation: 100% Humidity: 97% Wind: 4 mph SW Pollen Count: 36			
Today		68° 36°	Pollen 36
Wednesday		50° 39°	Pollen 36
Thursday		55° 39°	Pollen 36
Friday		54° 43°	Pollen 36
Saturday		64° 46°	Pollen 36
Sunday		64° 50°	Pollen 36
Monday		61° 50°	Pollen 36

Activity: Redesign the Weather Website

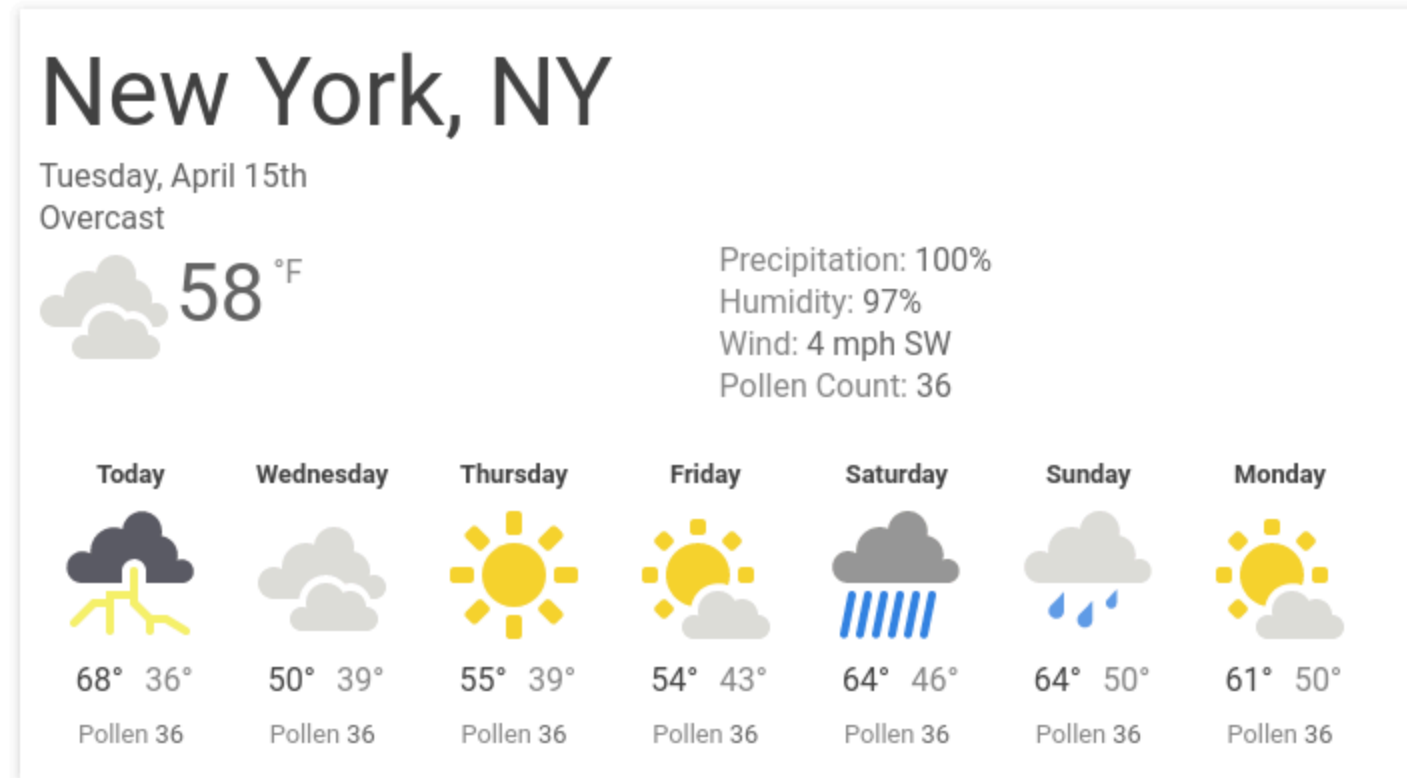
On the **back** of the handout, design (sketch) the weather website for **wide** screens.

Employ the visual design principles in your design.

New York, NY Tuesday, April 15th Overcast  58°F Precipitation: 100% Humidity: 97% Wind: 4 mph SW Pollen Count: 36			
Today		68° 36°	Pollen 36
Wednesday		50° 39°	Pollen 36
Thursday		55° 39°	Pollen 36
Friday		54° 43°	Pollen 36
Saturday		64° 46°	Pollen 36
Sunday		64° 50°	Pollen 36
Monday		61° 50°	Pollen 36

New York, NY Tuesday, April 15th Overcast  58°F Precipitation: 100% Humidity: 97% Wind: 4 mph SW Pollen Count: 36			
Today		68° 36°	Pollen 36
Wednesday		50° 39°	Pollen 36
Thursday		55° 39°	Pollen 36
Friday		54° 43°	Pollen 36
Saturday		64° 46°	Pollen 36
Sunday		64° 50°	Pollen 36
Monday		61° 50°	Pollen 36

Example/Demo: Responsive Design



Visual Design Principles

Visual Design Principles for Web Design

- Color, Contrast
- Proximity
- Alignment
- Hierarchy
- Repetition & Consistency

Color, Contrast

Contrast: The interaction between the foreground (text) and background.

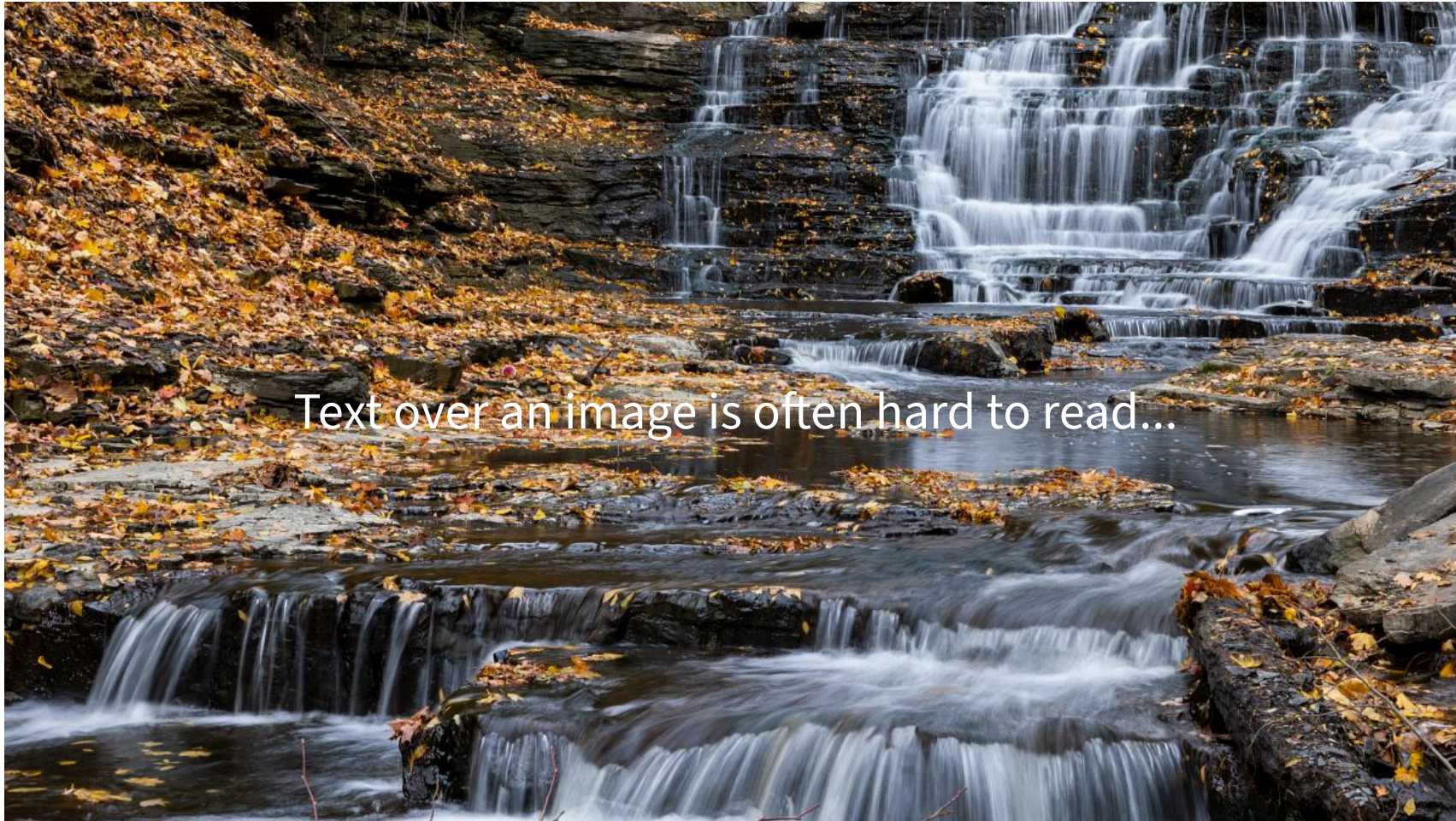
Insufficient contrast can make your text *less* **readable**.

Tip: When in doubt, lighten your light and darken your dark.

It is very hard to read text on a non-contrasting background.

It is very hard to read text on a patterned background.

Poor Contrast: Text Over an Image

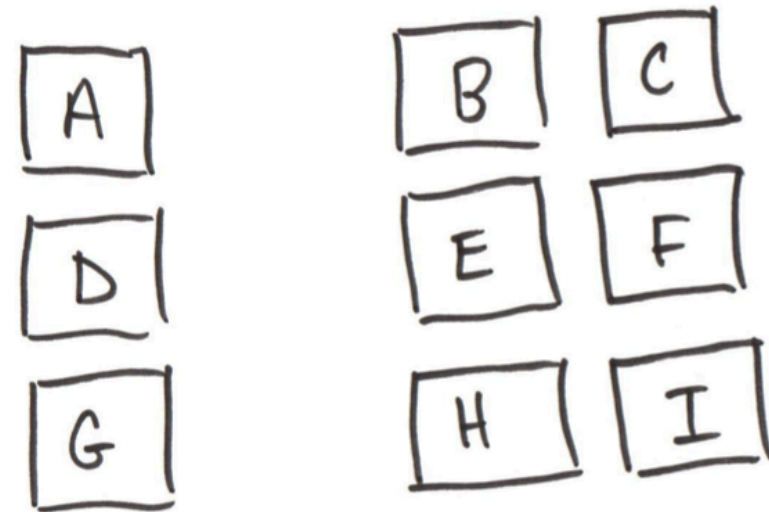


Text over an image is often hard to read...

Proximity

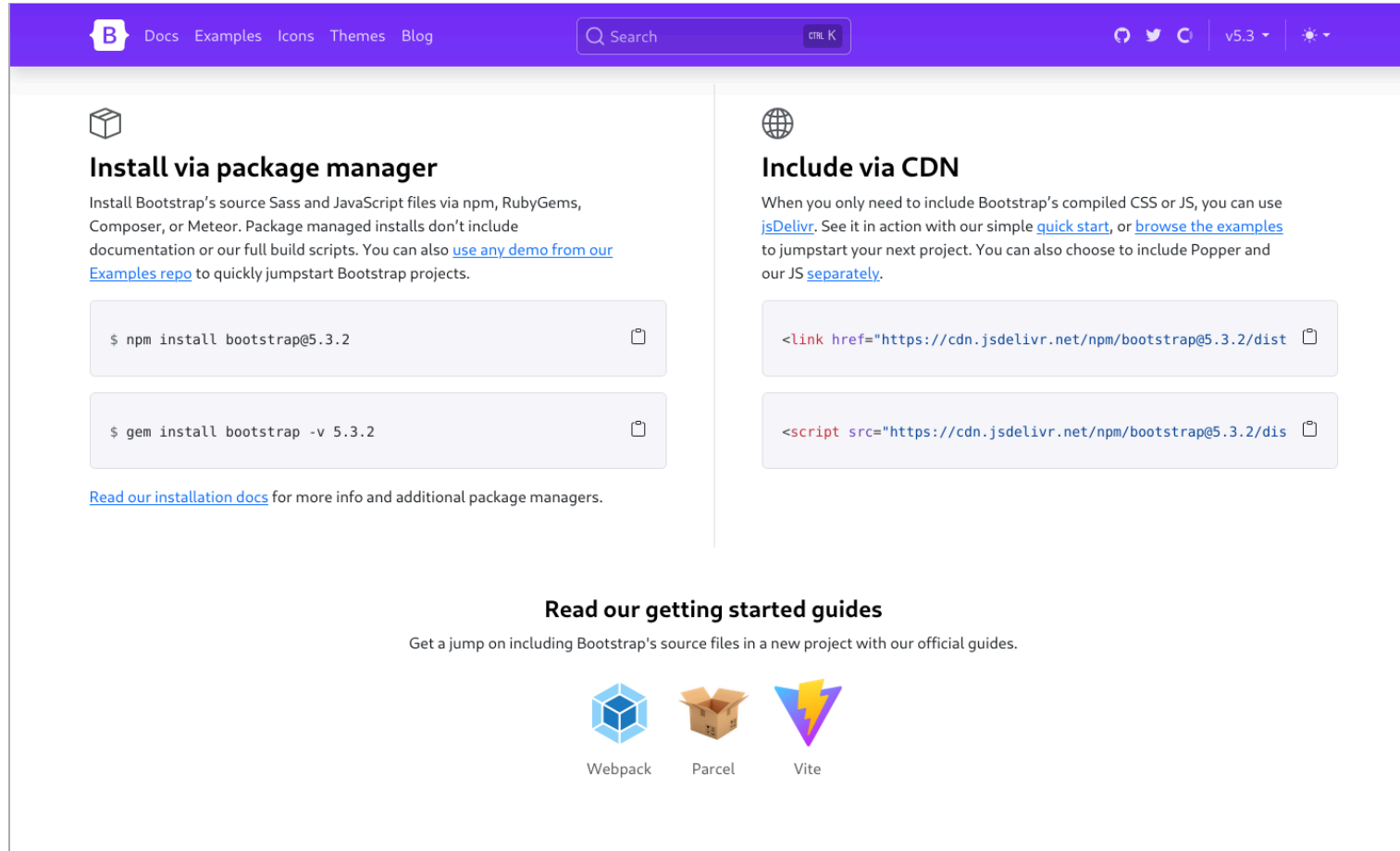
The distance between elements communicates their relationship

Usability: Elements closer together appear related; elements further apart appear less related



Check: Which elements are related to one another?

Discussion: Bootstrap – Proximity



The screenshot shows the Bootstrap 5.3.2 installation and CDN page. The page has a purple header with navigation links: Docs, Examples, Icons, Themes, Blog. A search bar is on the right. The main content is divided into two columns. The left column is titled 'Install via package manager' and shows two code blocks for installing Bootstrap via npm and RubyGems. The right column is titled 'Include via CDN' and shows two code blocks for including Bootstrap's compiled CSS or JS via a CDN. At the bottom, there is a section titled 'Read our getting started guides' with links to Webpack, Parcel, and Vite.

Install via package manager

Install Bootstrap's source Sass and JavaScript files via npm, RubyGems, Composer, or Meteor. Package managed installs don't include documentation or our full build scripts. You can also [use any demo from our Examples repo](#) to quickly jumpstart Bootstrap projects.

```
$ npm install bootstrap@5.3.2
```

```
$ gem install bootstrap -v 5.3.2
```

[Read our installation docs](#) for more info and additional package managers.

Include via CDN

When you only need to include Bootstrap's compiled CSS or JS, you can use [jsDelivr](#). See it in action with our simple [quick start](#), or [browse the examples](#) to jumpstart your next project. You can also choose to include Popper and our JS [separately](#).

```
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist" >
```

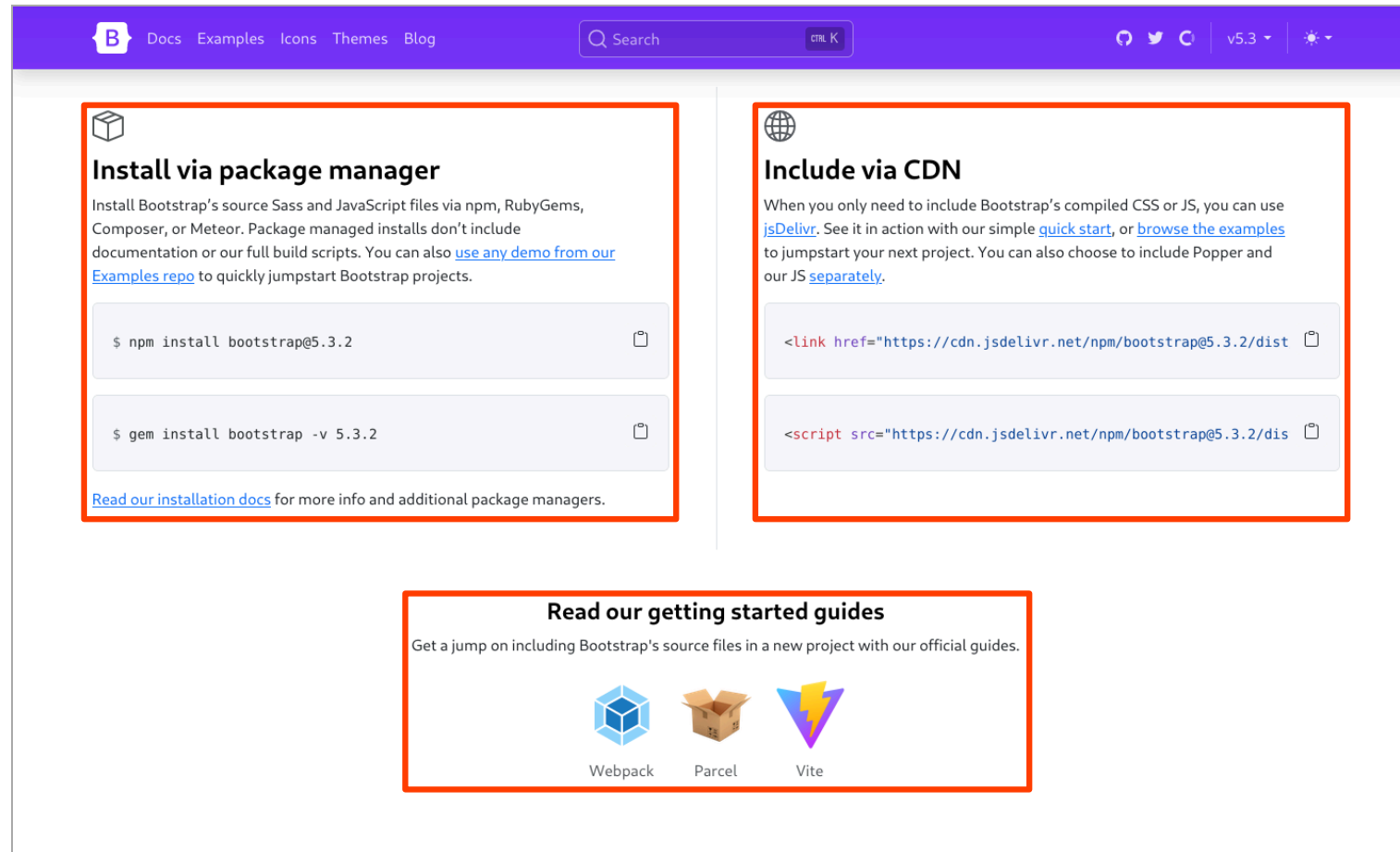
```
<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dis" >
```

Read our getting started guides

Get a jump on including Bootstrap's source files in a new project with our official guides.

 Webpack  Parcel  Vite

Example: Bootstrap – Proximity



The screenshot displays the Bootstrap 5.3.2 documentation page. The navigation bar at the top includes links for Docs, Examples, Icons, Themes, and Blog, along with a search bar and version selector (v5.3). The main content is divided into three sections, each highlighted with a red border:

- Install via package manager**: This section, marked with a cube icon, provides instructions for installing Bootstrap's source files using npm, RubyGems, Composer, or Meteor. It includes two code blocks:

```
$ npm install bootstrap@5.3.2
```

 and

```
$ gem install bootstrap -v 5.3.2
```

, each with a copy icon. A link to [Read our installation docs](#) is provided for more information.
- Include via CDN**: This section, marked with a globe icon, explains how to include Bootstrap's compiled CSS or JS using jsDelivr. It includes two code blocks:

```
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist" data-bbox="528 508 755 525
```

 and

```
<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dis" data-bbox="528 578 755 595
```

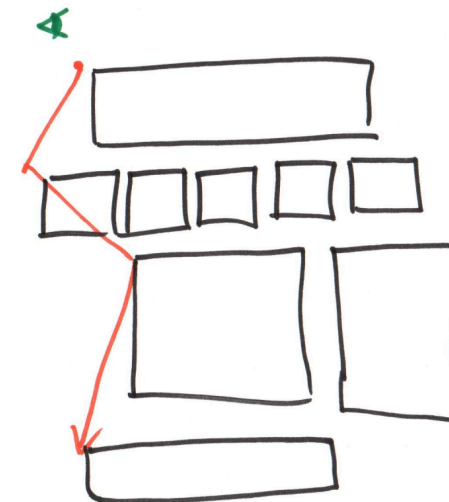
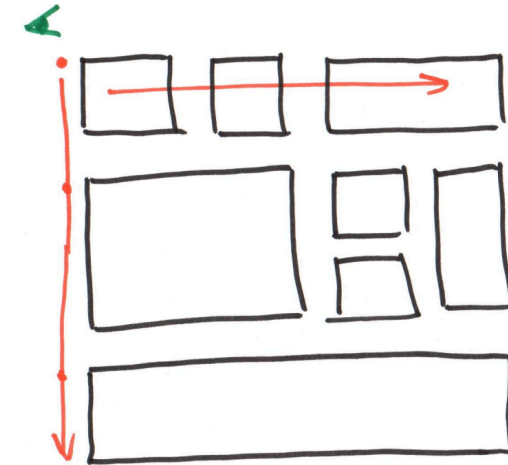
, each with a copy icon.
- Read our getting started guides**: This section, marked with a globe icon, encourages users to get a jump on including Bootstrap's source files in a new project. It features three icons representing different build tools: Webpack, Parcel, and Vite.

Alignment

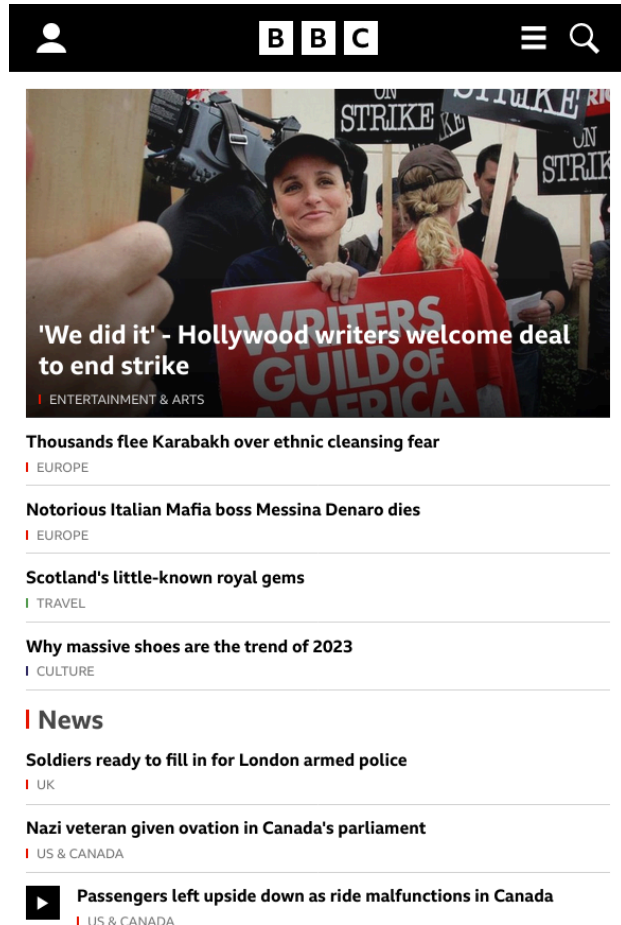
The placement of elements so that they line up in the composition (layout.)

Usability: Alignment guides the user's eye through the design

Tip: We noticed patterns.
Avoid slight misalignments.



Example: Usable Alignment



Ethnic Armenians from Nagorno-Karabakh arrive in Armenia

By Kathryn Armstrong
BBC News

A growing stream of ethnic Armenian refugees are fleeing Nagorno-Karabakh following Azerbaijan's seizure of the disputed region last week.

More than 3,000 people have so far crossed into Armenia from the enclave, which is home to a majority of some 120,000 ethnic Armenians.

They left after the government in Yerevan announced plans to move those made homeless by the fighting.

It also warned that those who stayed could face ethnic cleansing.

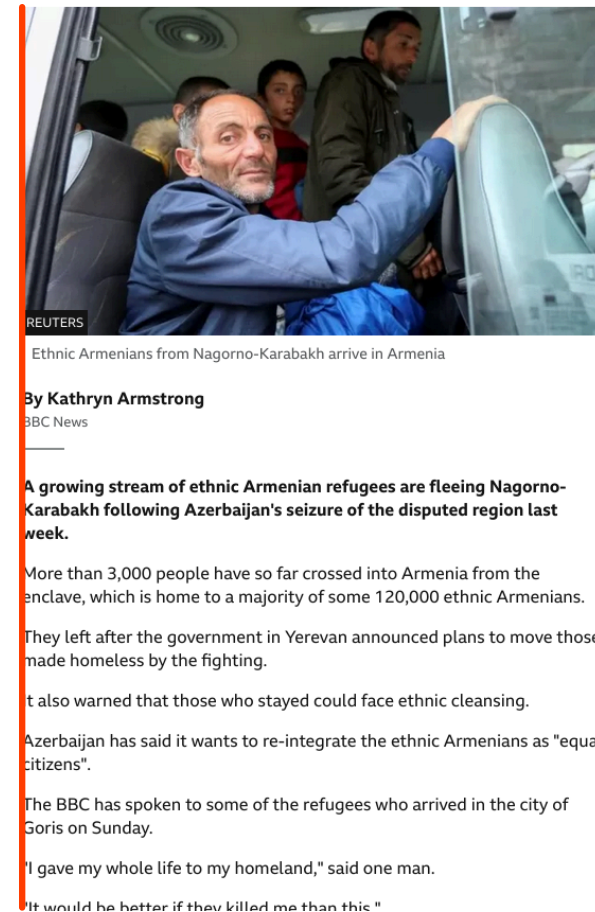
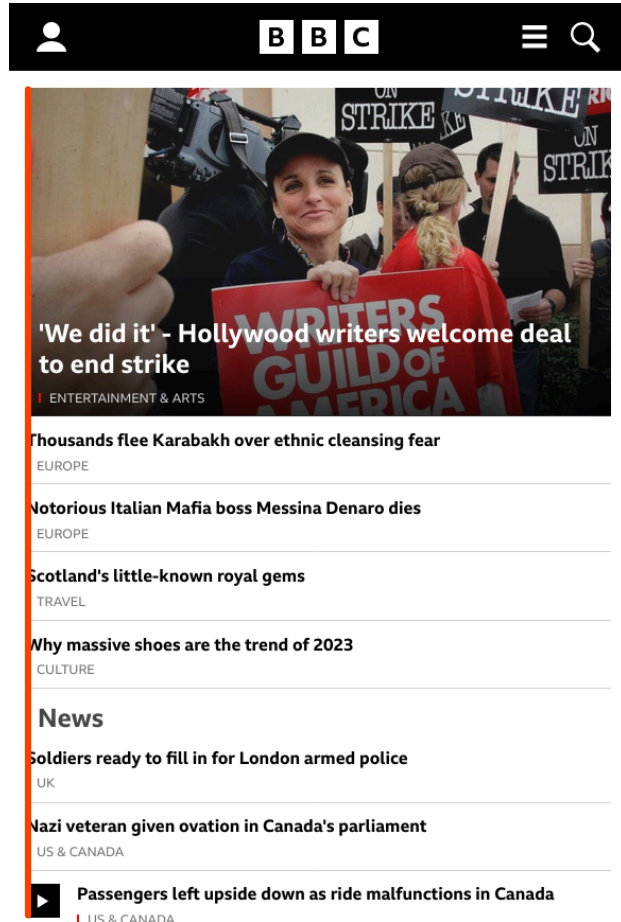
Azerbaijan has said it wants to re-integrate the ethnic Armenians as "equal citizens".

The BBC has spoken to some of the refugees who arrived in the city of Goris on Sunday.

"I gave my whole life to my homeland," said one man.

"It would be better if they killed me than this "

Example: Usable Alignment



Activity: Which is Easier to Read?

Screamin' Eagle

3 languages

Article

Talk

Tools

From Wikipedia, the free encyclopedia

Coordinates: 38°30′59″N 90°40′34″W

For the motorcycle performance division, see [Harley-Davidson](#).

Screamin' Eagle is a [wooden roller coaster](#) located at [Six Flags St. Louis](#) in [Eureka, Missouri](#). When it opened on April 10, 1976 for America's Bicentennial celebration, [Guinness World Records](#) listed it as the largest coaster at 110 feet (34 m) high and as the fastest coaster at 62 mph (100 km/h). The ride is a modified 'L'-Shaped [Out And Back](#). The Screamin' Eagle was manufactured by the [Philadelphia Toboggan Coasters](#) and was the last coaster designed by [John Allen](#), who was a designer of roller coasters. Allen believed a coaster should inspire awe, not only from a ride full of thrills, but also from its magnificent beauty. Originally Allen wanted to design a coaster to replace the Comet at [Forest Park Highlands](#), but lack of funds prevented him from doing such. The Screamin' Eagle is reminiscent of the Comet, mirroring its L-shape, but to a much larger scale.

Renovations

[edit]

In 1990, the trains were replaced, the turns banked and a double up hill was removed from a section of the track. From 2003-2006 the Screamin' Eagle received significant repairs such as painting, re-tracking and replacing of the control panel.

Awards

[edit]

Golden Ticket Awards: Top Wood Roller Coasters

Year	2008	2009	2016	2017	2018	2019	2021	2022
Ranking	48 ^[1]	40 ^[2]	39 ^[3]	43 ^[4]	38 (tie) ^[5]	42 ^[6]	36 ^[7]	38 ^[8]

• Designated by the [American Coaster Enthusiasts](#) a "Coaster Landmark" on June 21, 2016

Preceded by

World's Fastest Roller Coaster

Succeeded by

Screamin' Eagle

3 languages

Article

Talk

Tools

From Wikipedia, the free encyclopedia

Coordinates: 38°30′59″N 90°40′34″W

For the motorcycle performance division, see [Harley-Davidson](#).

Screamin' Eagle is a [wooden roller coaster](#) located at [Six Flags St. Louis](#) in [Eureka, Missouri](#). When it opened on April 10, 1976 for America's Bicentennial celebration, [Guinness World Records](#) listed it as the largest coaster at 110 feet (34 m) high and as the fastest coaster at 62 mph (100 km/h). The ride is a modified 'L'-Shaped [Out And Back](#). The Screamin' Eagle was manufactured by the [Philadelphia Toboggan Coasters](#) and was the last coaster designed by [John Allen](#), who was a designer of roller coasters. Allen believed a coaster should inspire awe, not only from a ride full of thrills, but also from its magnificent beauty. Originally Allen wanted to design a coaster to replace the Comet at [Forest Park Highlands](#), but lack of funds prevented him from doing such. The Screamin' Eagle is reminiscent of the Comet, mirroring its L-shape, but to a much larger scale.

Renovations

[edit]

In 1990, the trains were replaced, the turns banked and a double up hill was removed from a section of the track. From 2003-2006 the Screamin' Eagle received significant repairs such as painting, re-tracking and replacing of the control panel.

Awards

[edit]

Golden Ticket Awards: Top Wood Roller Coasters

Year	2008	2009	2016	2017	2018	2019	2021	2022
Ranking	48 ^[1]	40 ^[2]	39 ^[3]	43 ^[4]	38 (tie) ^[5]	42 ^[6]	36 ^[7]	38 ^[8]

• Designated by the [American Coaster Enthusiasts](#) a "Coaster Landmark" on June 21, 2016

Preceded by

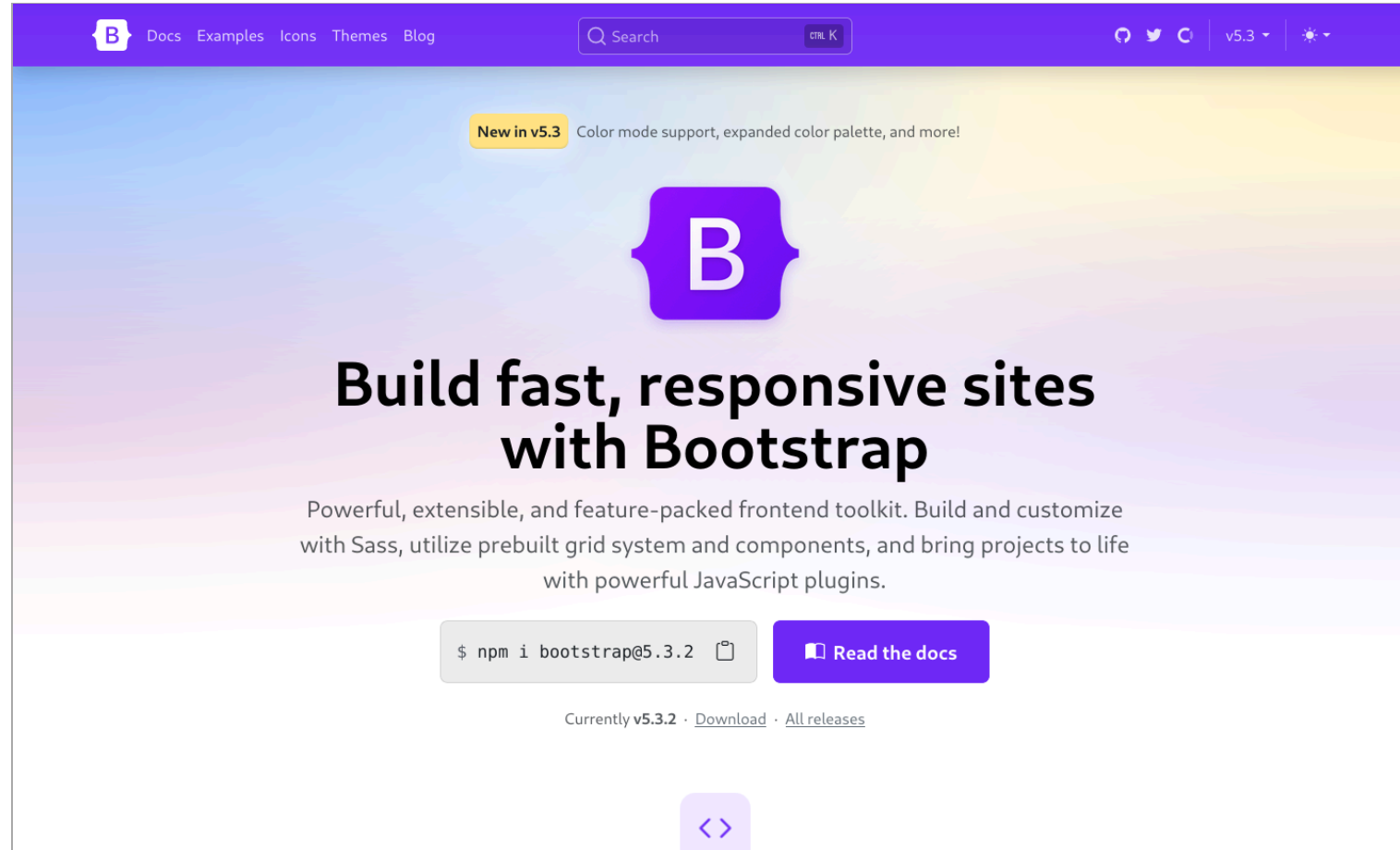
World's Fastest Roller Coaster

Succeeded by

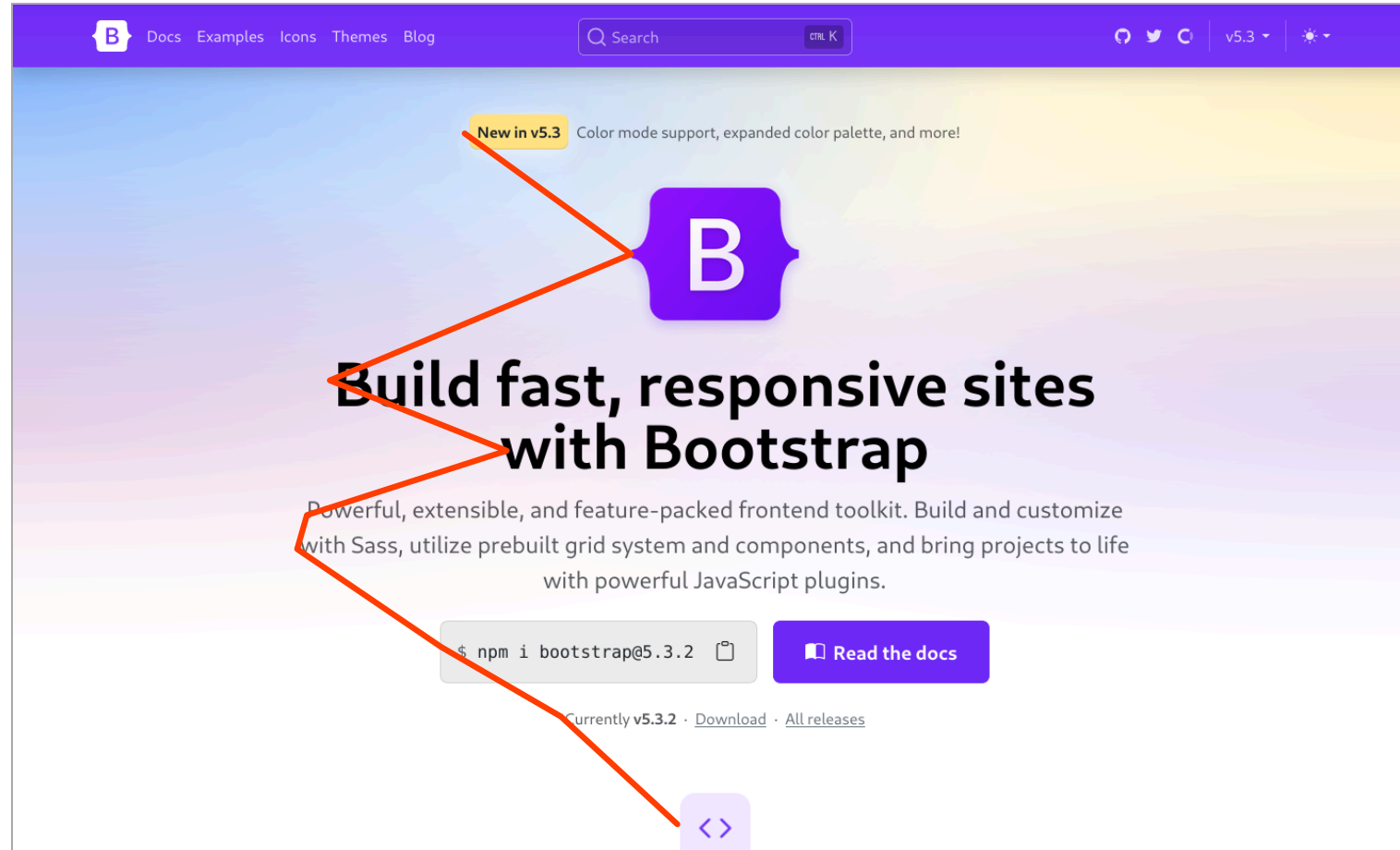
INFO 1300 - Responsive Breakpoints & Visual Design Principles (9/30/2026)

33

Example: Center Alignment – Less Usable



Example: Center Alignment – Less Usable

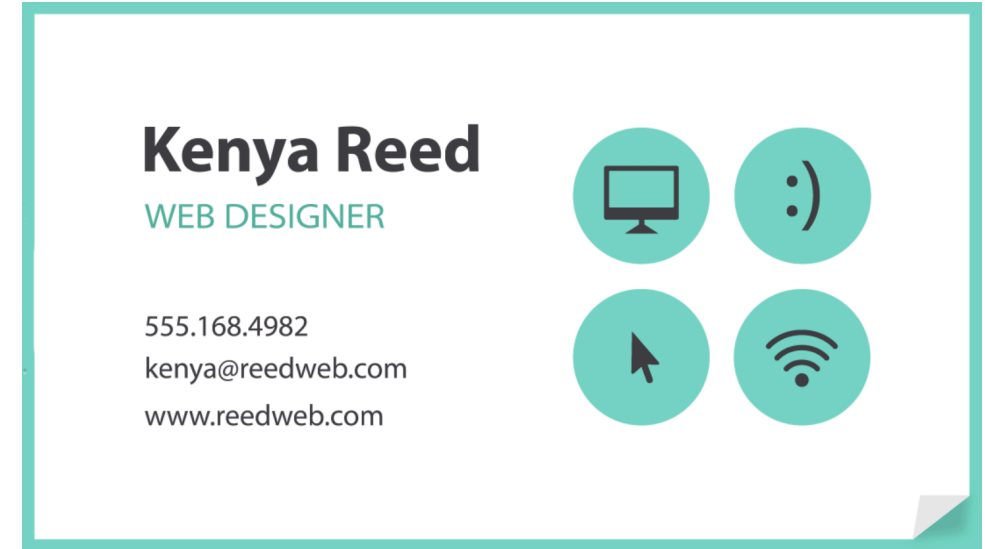


Hierarchy

The scale of elements communicates importance.

Usability: Small / Large; scale communicates importance.

Tip: Headings should be larger than the paragraph text under the heading.



Source: <https://edu.gcfglobal.org/en/beginning-graphic-design/layout-and-composition/1/>

Example: Hierachy

CONTACT US

NON-CANCER CLINICAL STUDIES QUESTIONS

Phone: 800-664-4542 (toll-free)

[Contact form](#)

CANCER-RELATED CLINICAL STUDIES QUESTIONS

Phone: 855-776-0015 (toll-free)

[Contact form](#)

INTERNATIONAL PATIENT CLINICAL STUDIES QUESTIONS

Phone: 507-284-8884

Email: intl.mcr@mayo.edu



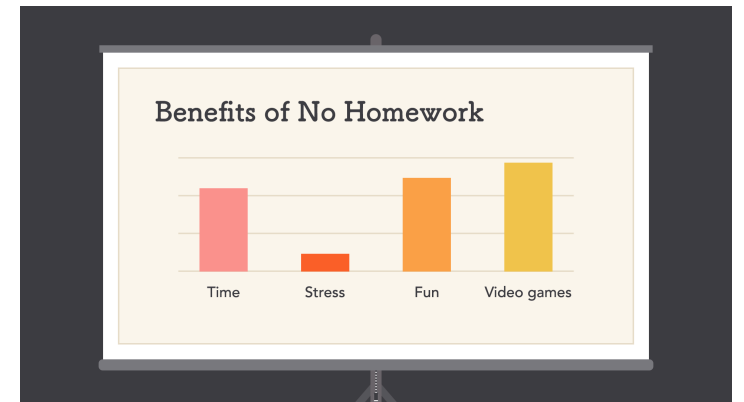
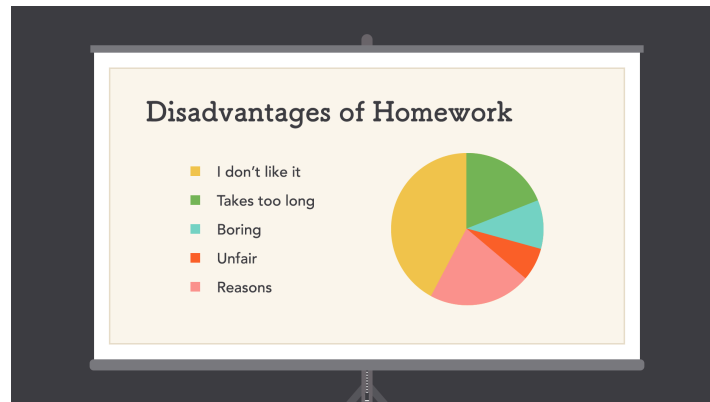
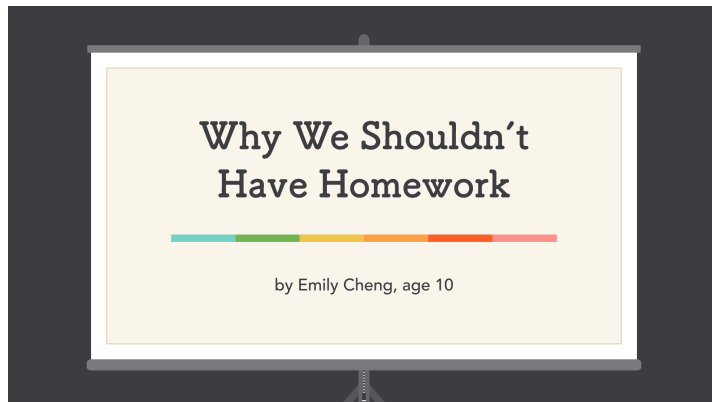
Our team can answer questions, discuss your needs and help locate research studies that match your interests. We can also provide interpreter services for non-English-speaking patients.

[Find out more](#)

Repetition & Consistency

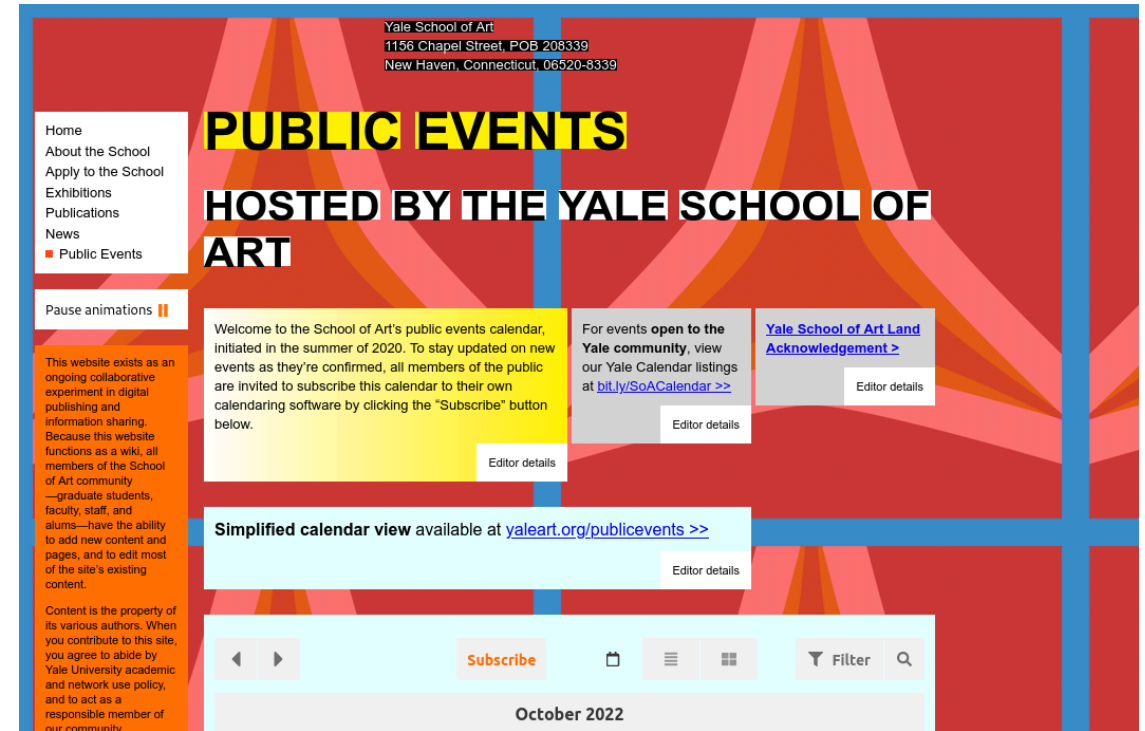
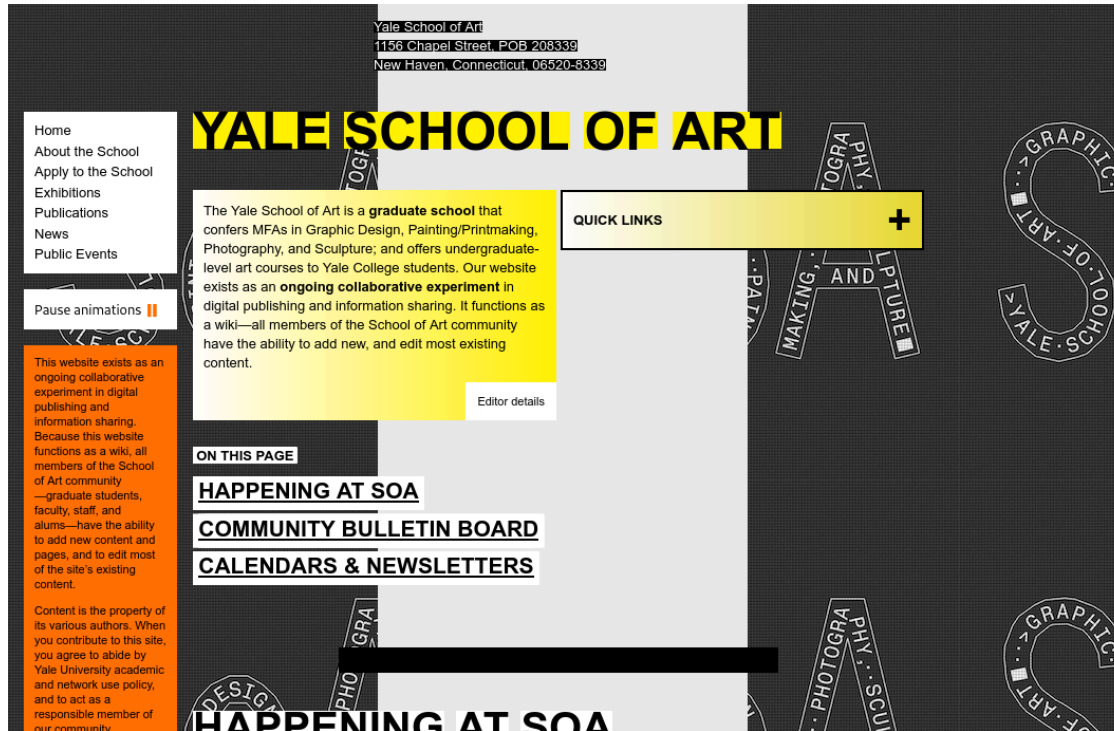
Repeat visual elements in pages **and** across pages.
Provide a consistent experience across pages.

Usability: Similar design indicates that user is on the same website.



Source: <https://edu.gcfglobal.org/en/beginning-graphic-design/layout-and-composition/1/>

Example: Poor Repetition & Consistency



What's Next

Thursday: Study Session in CIS Ramble 5pm - 6pm

Friday: Practice Quiz 4

Monday: Homework 6 Due