# Responsive Web Layout

# Designing for Multiple Devices

- Websites can be viewed on devices with different screen sizes, such as laptops, tablets and cellphones.
- Viewport is the term used to signify the screen size, or more accurately, the visible area of a web page.
- Different devices have different *viewport* sizes.
- **When the same website is designed to fit several viewport sizes, it is said to have a responsive design.**

# Responsive Layout

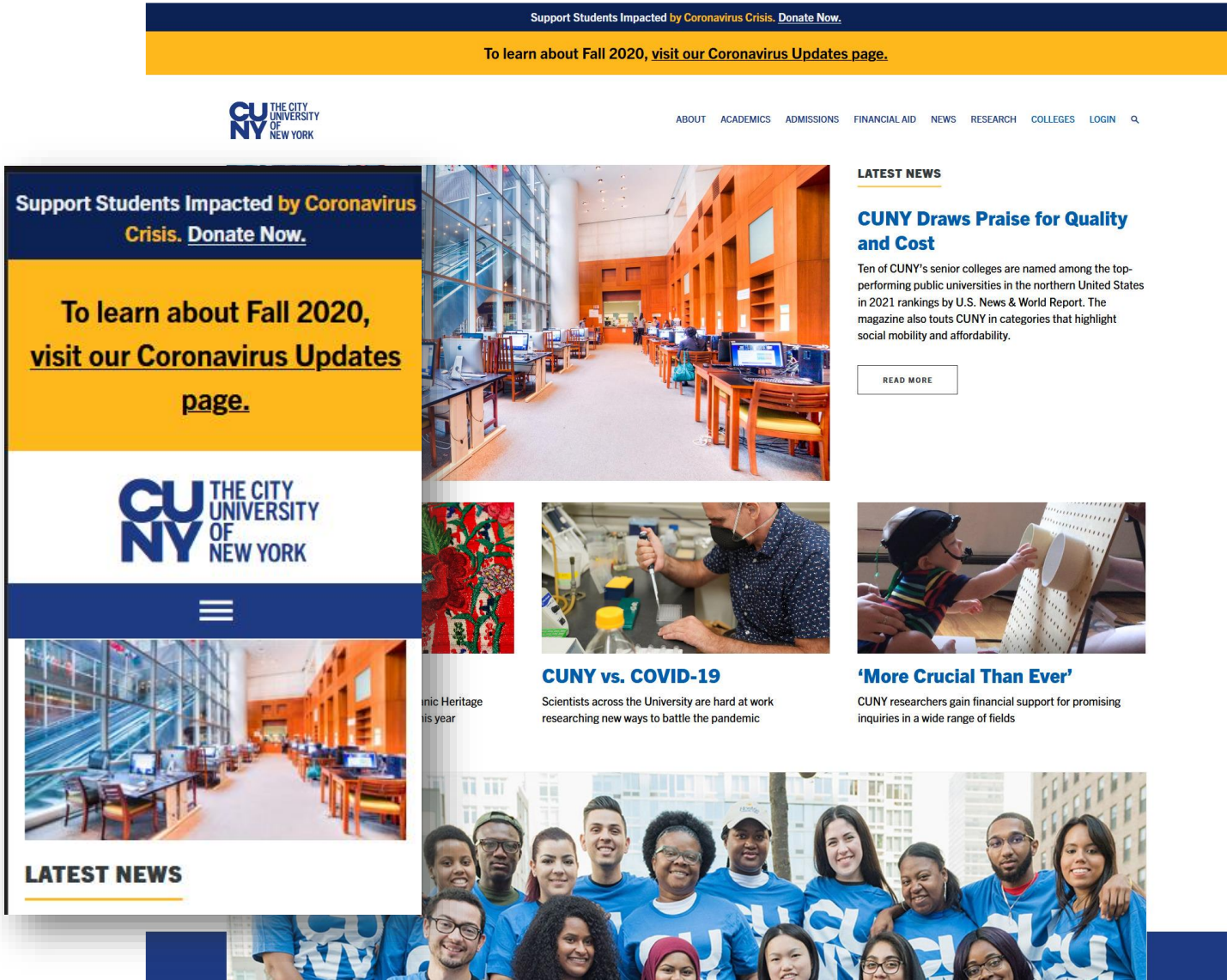
Responsive layouts adapts to viewport sizes, usually by:

- changing the arrangement of elements on the page
- changing the size of elements
- eliminating some elements on small viewports
- changing navigation styles to best fit viewport size.

# Responsive Layout - Example

CUNY website is responsive.

- On mobile the number of columns drops to one and the navigation style changes from a horizontal menu to a dropdown menu.



# Responsive Breakpoints

**A breakpoint is the viewport width at which the layout is designed to change**. At a given breakpoint range, the layout adjusts to suit the viewport size and orientation.

Commonly used breakpoints are:

- Extra small devices (portrait phones): less than 576px.
- Small devices (landscape phones): 576px to 768px.
- Medium devices (tablets): 768px to 992px.
- Large devices (desktops & laptops): 992px to 1200px.
- Extra large devices (large desktops) 1200px and up.

# Responsive Breakpoints

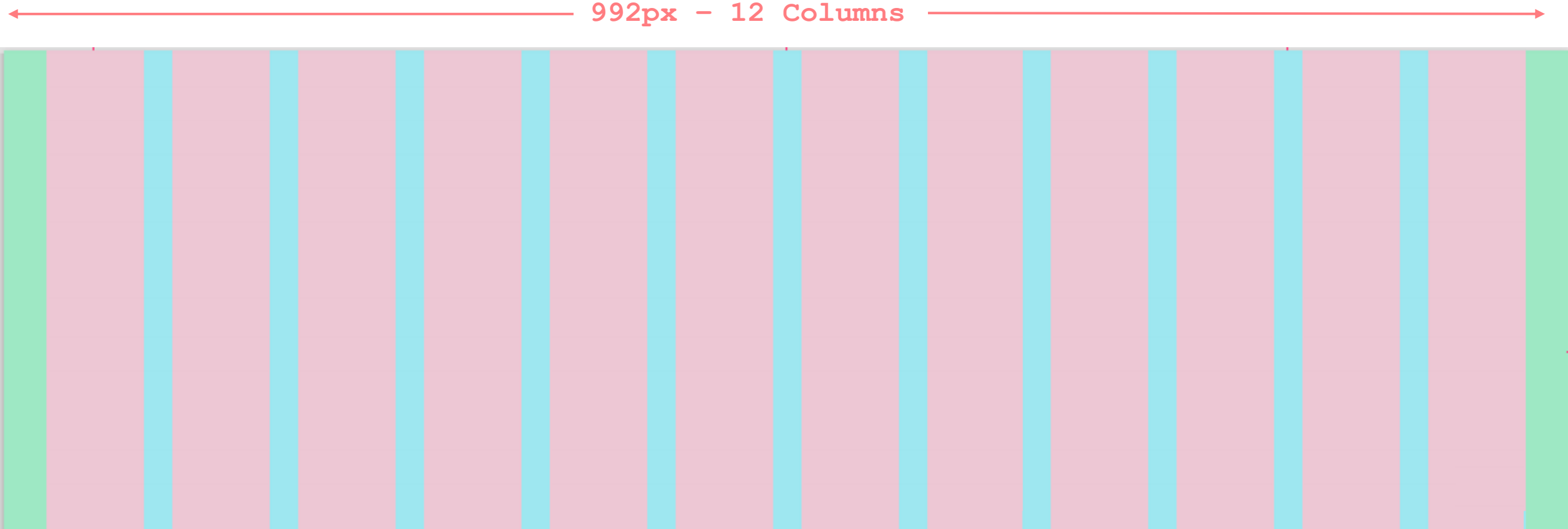
- At the minimum, a responsive website's layout adjusts to two breakpoint ranges -  small viewports ( cellphones) and large viewports (everything larger than a cellphone).
- At each breakpoint range, the layout and navigation design stay the same, but the sizes of elements may still change to adapt to the different viewport sizes in the given range.

# Responsive Grid-Based Layout

A responsive layout is designed so that the number of columns displayed is determined by the breakpoint range at which a web page is viewed.

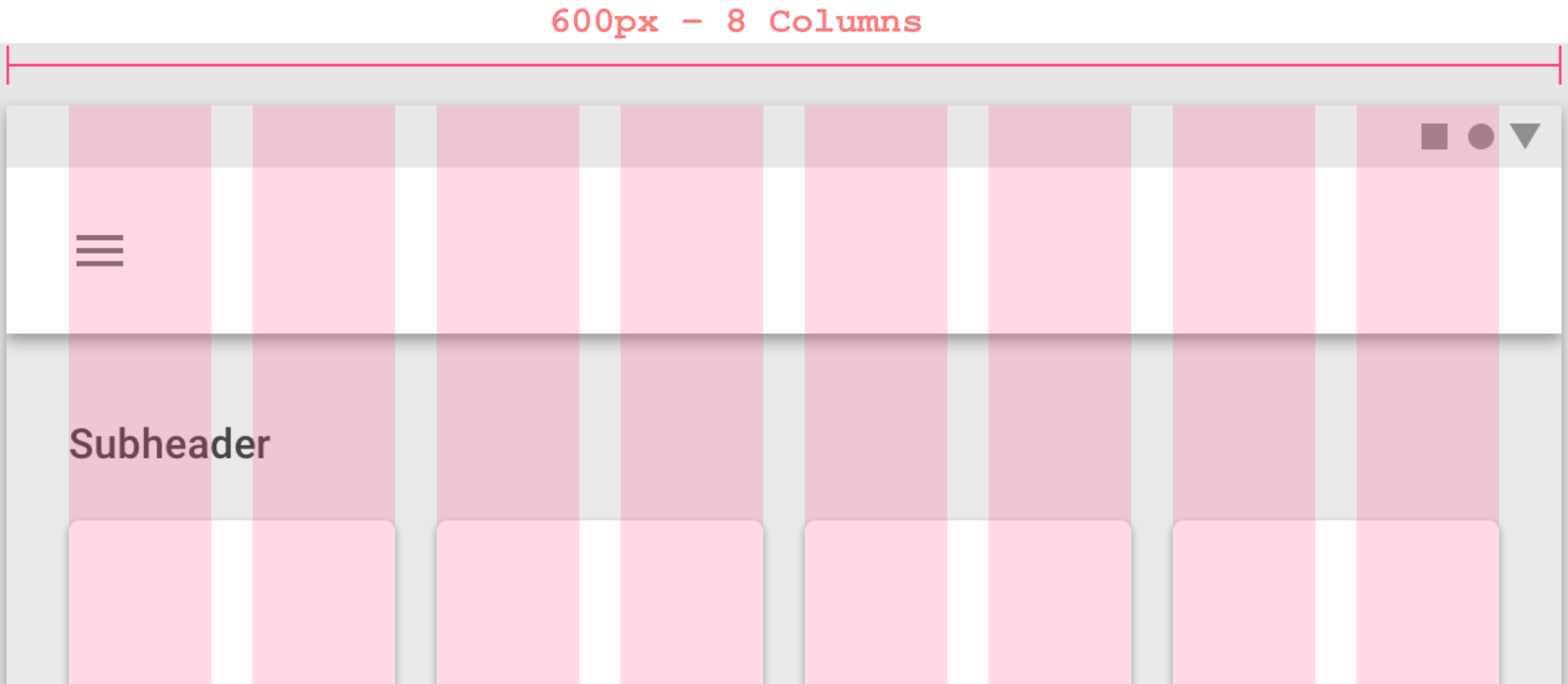
# Responsive Grid - Columns

On a computer monitor, at a breakpoint of 992px, this layout grid uses 12 columns.



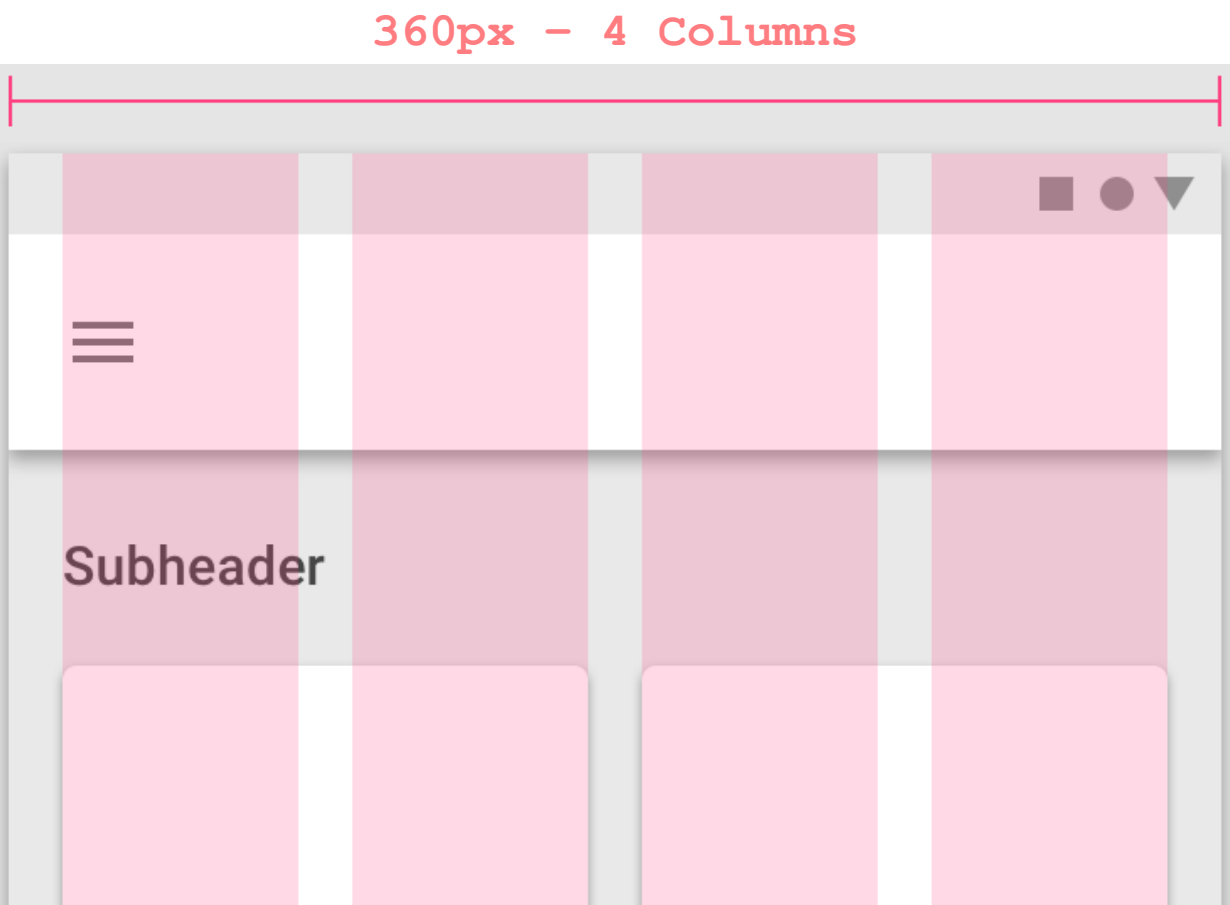
# Responsive Grid - Columns

On tablet, at a breakpoint of 600px, this layout grid uses 8 columns.



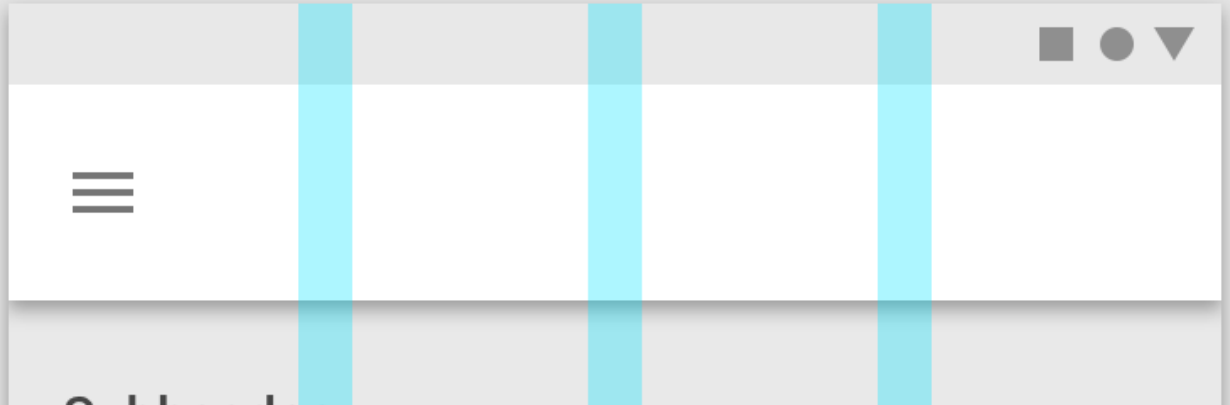
# Responsive Grid - Columns

On mobile, at a breakpoint of 360px, this layout grid uses 4 columns.



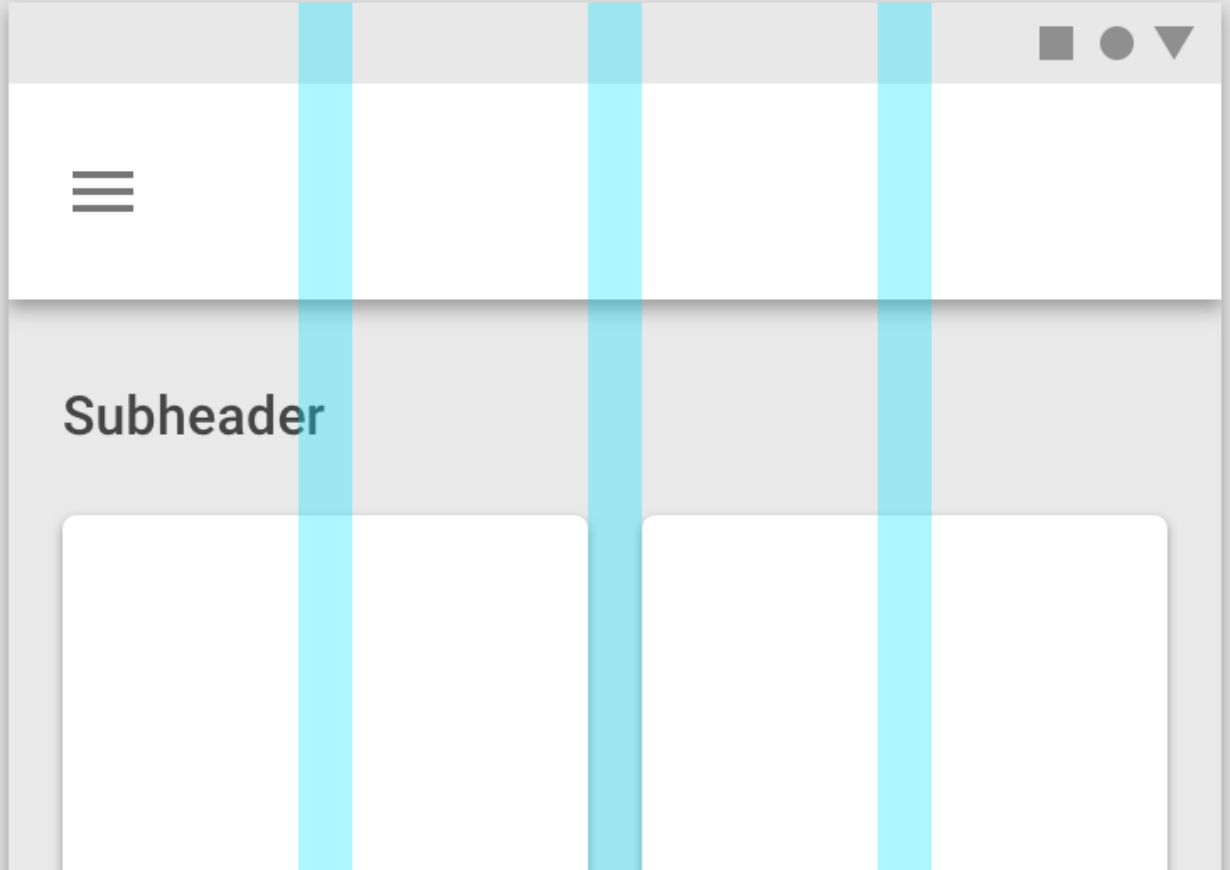
# Responsive Grid - Gutters

- **Gutters are the spaces between columns.** They separate content with consistent amount of spacing.
- To better adapt to the screen, gutter width can change at different breakpoints.
- Wider gutters are appropriate for larger viewports.



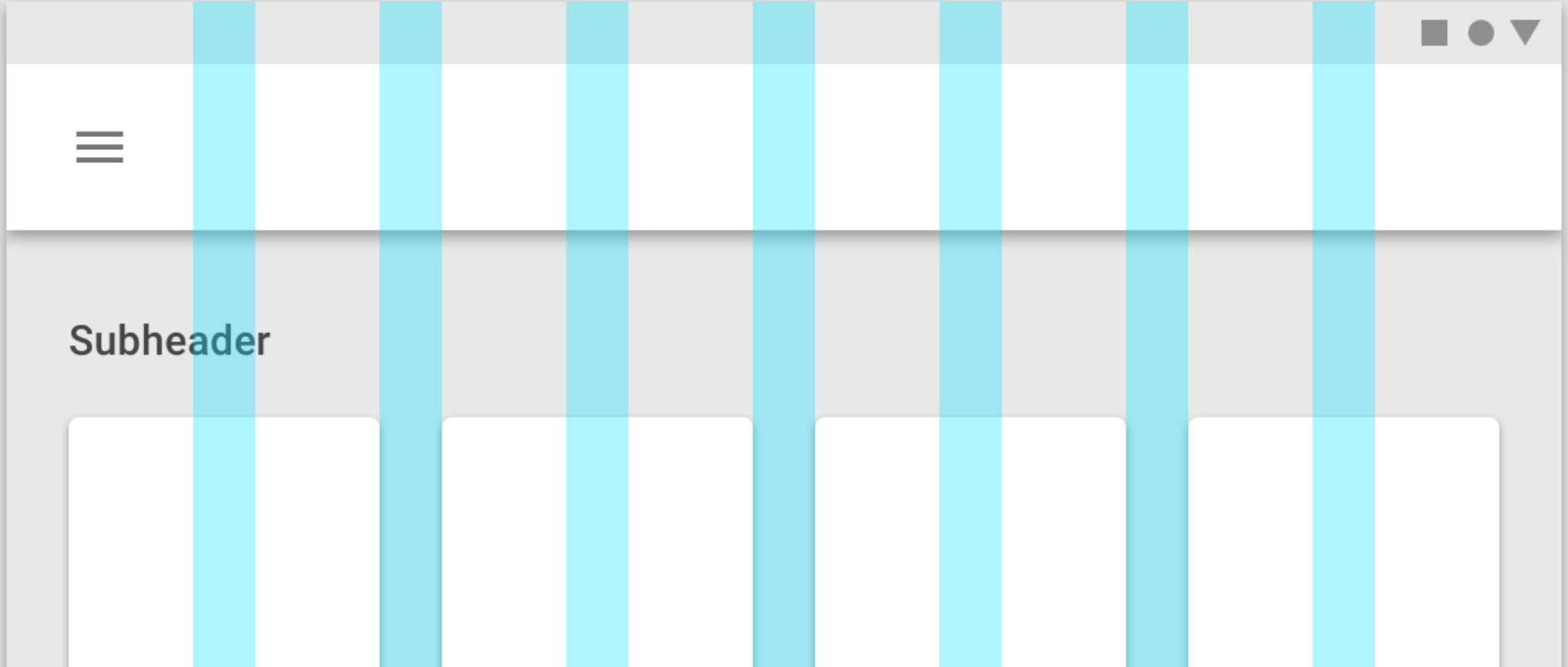
# Responsive Grid - Gutters

On mobile, at a breakpoint of 360px, this layout grid uses 16px gutters.



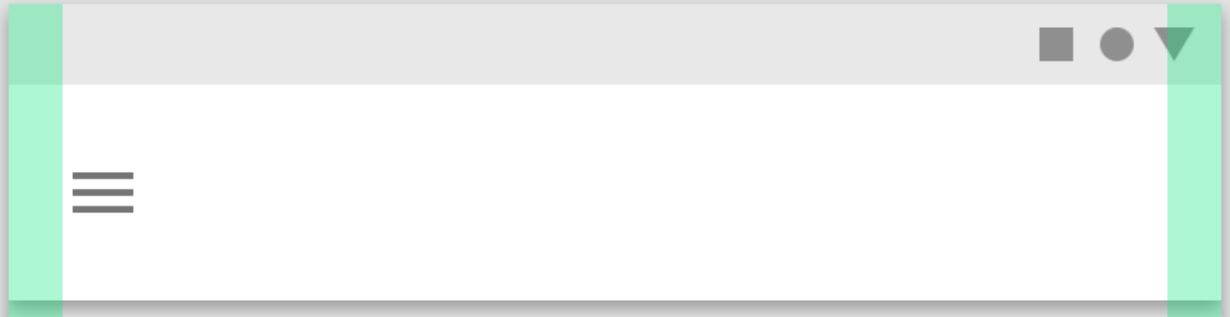
# Responsive Grid - Gutters

On tablet, at a breakpoint of 600px, this layout grid uses 24px gutters.



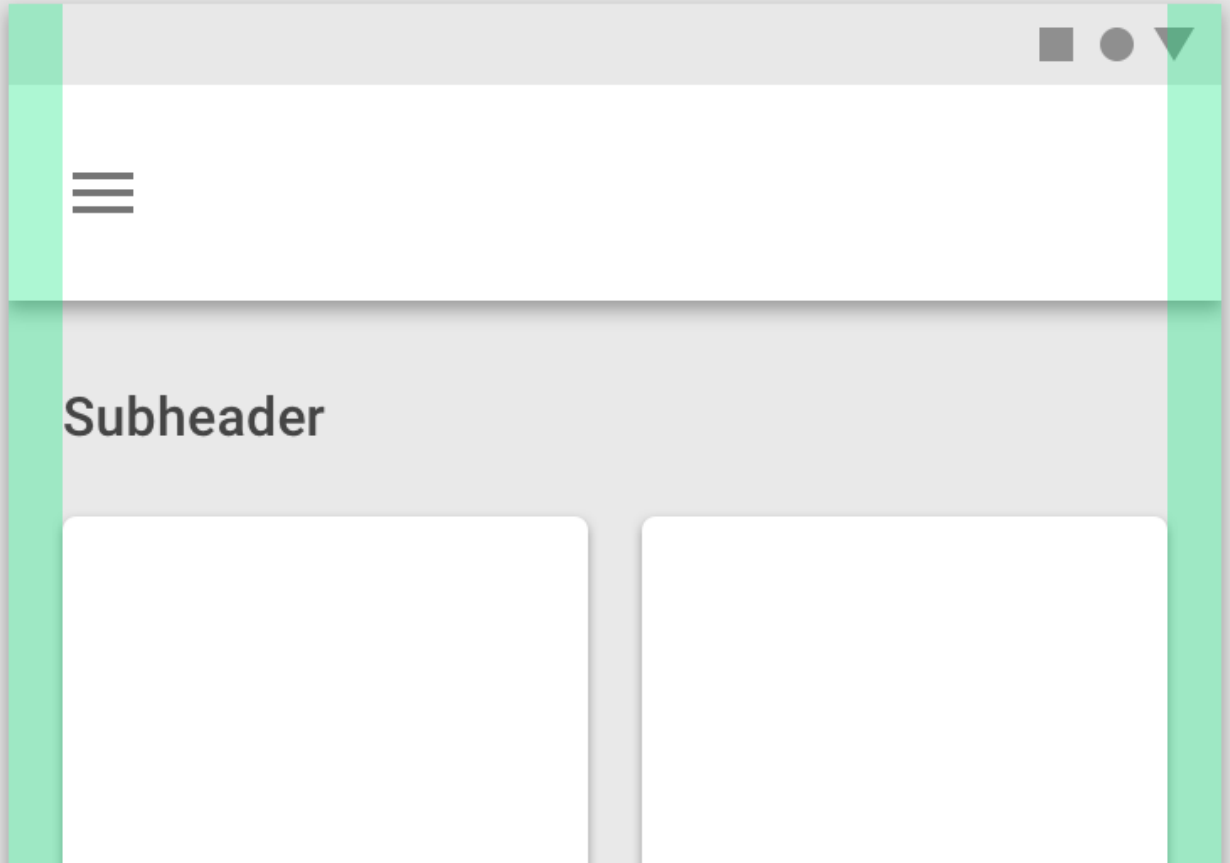
# Responsive Grid - Margins

- **Margins are the space between content and the left and right edges of the screen.**
- To better adapt to the screen, the margin width can change at different breakpoints.
- Wider margins are appropriate for larger viewports, as they create more whitespace around the perimeter of content.



# Responsive Grid - Margins

On mobile, at a breakpoint of 360px, this layout grid uses 16px margins.



# Responsive Grid - Margins

On a tablet, at a breakpoint of 600px, this layout grid uses 24px margins.