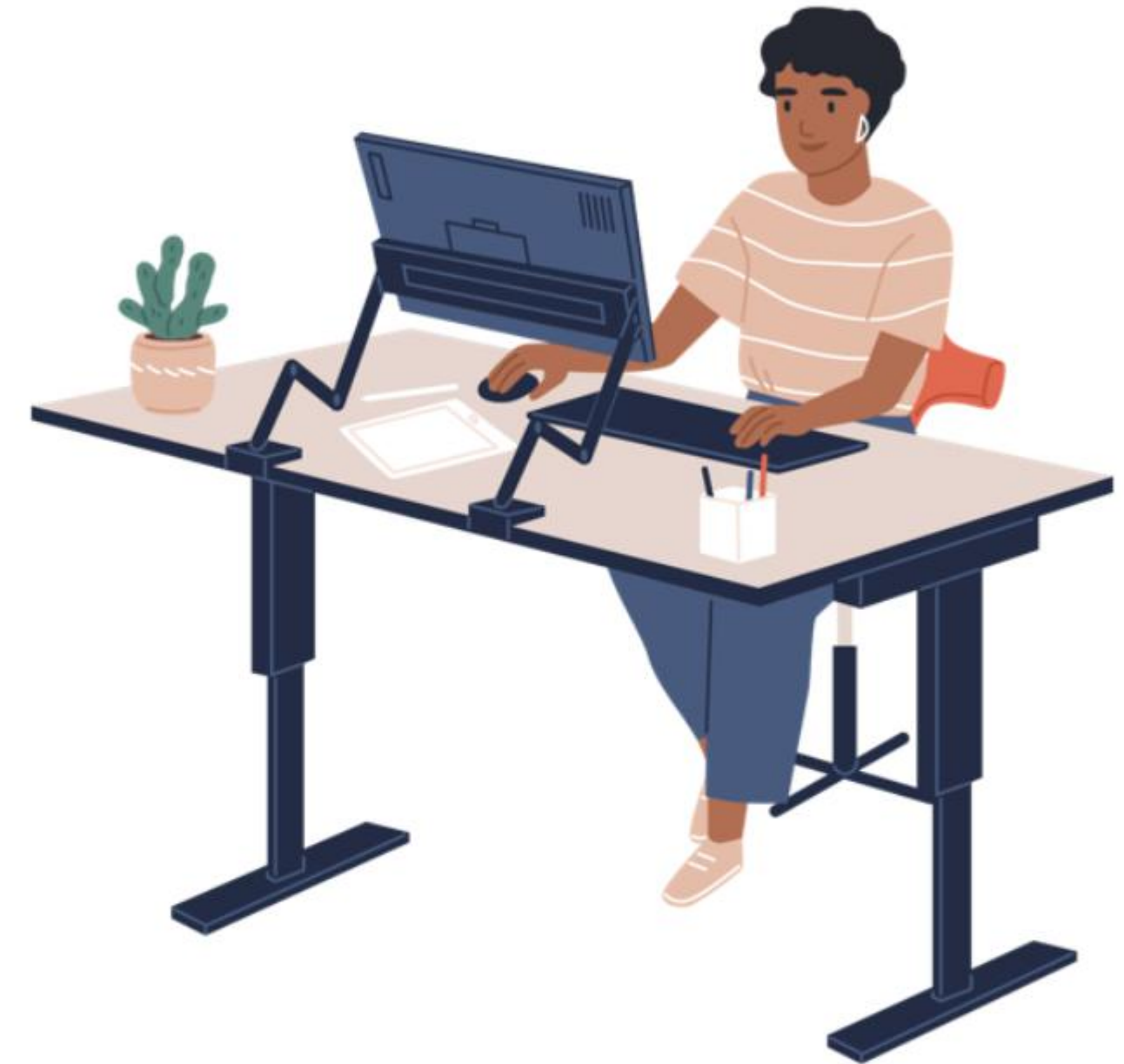


# Learning Consolidation

## **Develop a Responsive Web Page Using Modern CSS**





## In this sprint, you learned to:

- Explore responsive web design patterns
- Apply CSS display properties like flexbox and grid
- Create a responsive web design using flexible images
- Apply CSS media queries and breakpoints

# Responsive Web Design



Having a mobile responsive website is not just another option - it's a requirement !



# Responsive Design Patterns

- Responsive design patterns are used to make a web page responsive across various devices of varying screen sizes.
- Most design patterns use breakpoints to adapt to different screen sizes.
- A breakpoint is the point at which a different CSS will be applied, usually through a media query, to optimize the design for the user's viewport.
- Viewport is the user's visible area of a web page.
- A viewport varies with the device and is smaller on a cell phone than on a computer screen.
- A meta viewport tag gives the browser instructions on how to control a page's dimensions and scaling.

# Responsive Web Design Patterns

- Mostly fluid
- Layout shifter
- Column drop
- Off canvas
- Tiny tweaks

A breakpoint is a point at which a different CSS will be applied, usually through a media query, to optimize the design for the user's viewport. A good example of a breakpoint would be one where your layout has to change from two columns to four columns from one device to another.

In a "Mostly Fluid" pattern, the core structure of the layout doesn't change until the smallest screen width. Instead, the design mostly relies on fluid grids to adapt to a variety of screen sizes.

On large or medium screens, it usually remains the same size, simply adjusting the margins on wider screens. On smaller screens, the fluid grid causes the main content to reflow, while columns are stacked vertically. One major advantage of this pattern is that it usually only requires one breakpoint between small screens and large screens.

# Mostly Fluid Design Pattern

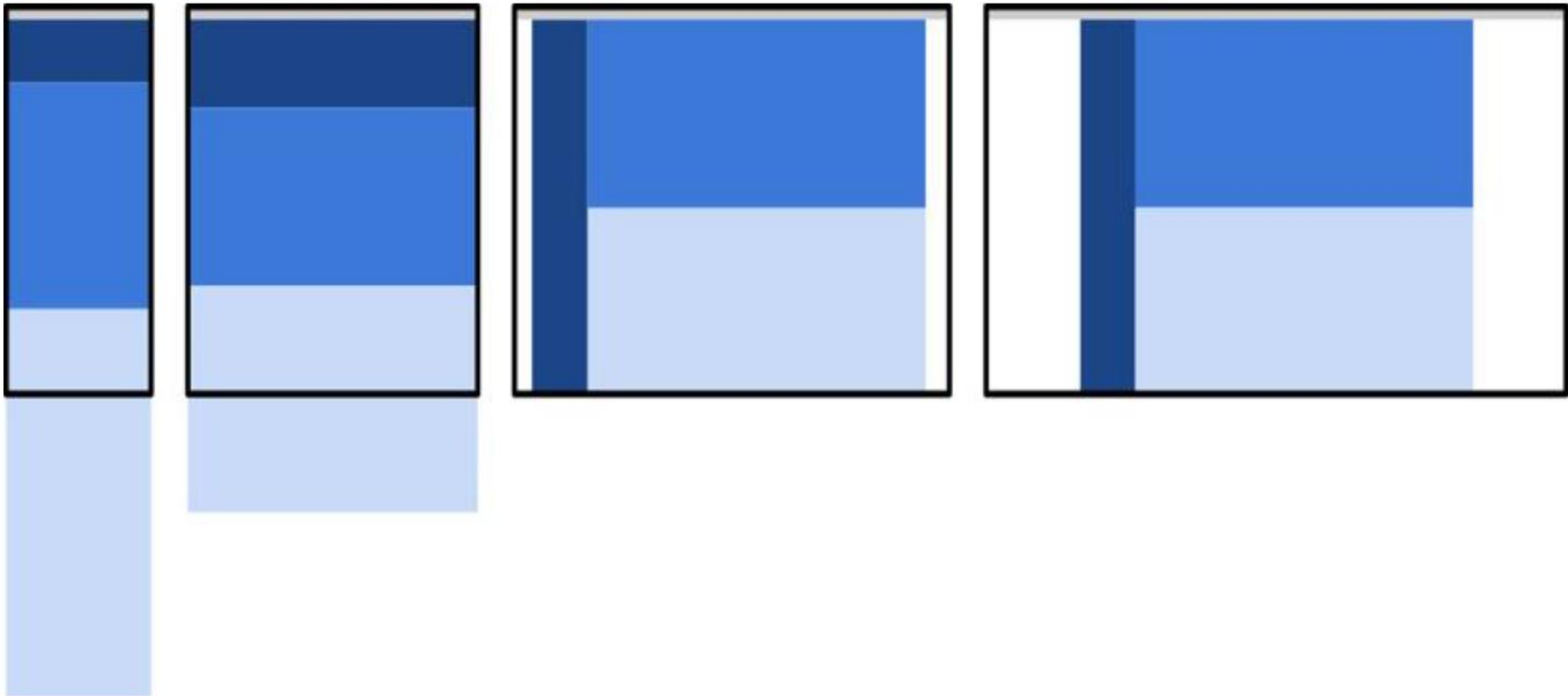


The layout shifter pattern is the most responsive pattern, with multiple breakpoints across several screen widths.

The key difference to this layout is the way content moves about instead of reflowing and dropping below other columns. Due to the significant differences between each major breakpoint, it is more complex to maintain and likely involves changes within elements, not just overall content layout.

This pattern does the most to adapt across different screen sizes and inherently requires more work. That is, different layouts are used on large, medium, and small screens.

# Layout Shifter Design Pattern



Responsive design has several primary development components which are combined to create the entire design process.

**Fluid Grid System:** Fluid grids are based upon the sizing of page elements as opposed to using pixels. They're designed with proportions in mind so that the viewing screen will be properly fitted regardless of its size. They will also start using percentages for sizing.

**Flexible images:** The size of flexible images is dictated by relative units, so they are kept inside of their element. Adapt your images or other media to load differently depending on the device, either by scaling or by using the CSS overflow property.

**Media queries:** Media queries allow the gathering of information about a site visitor. This information is then applied to CSS styles, based on the characteristics of the accessing device.

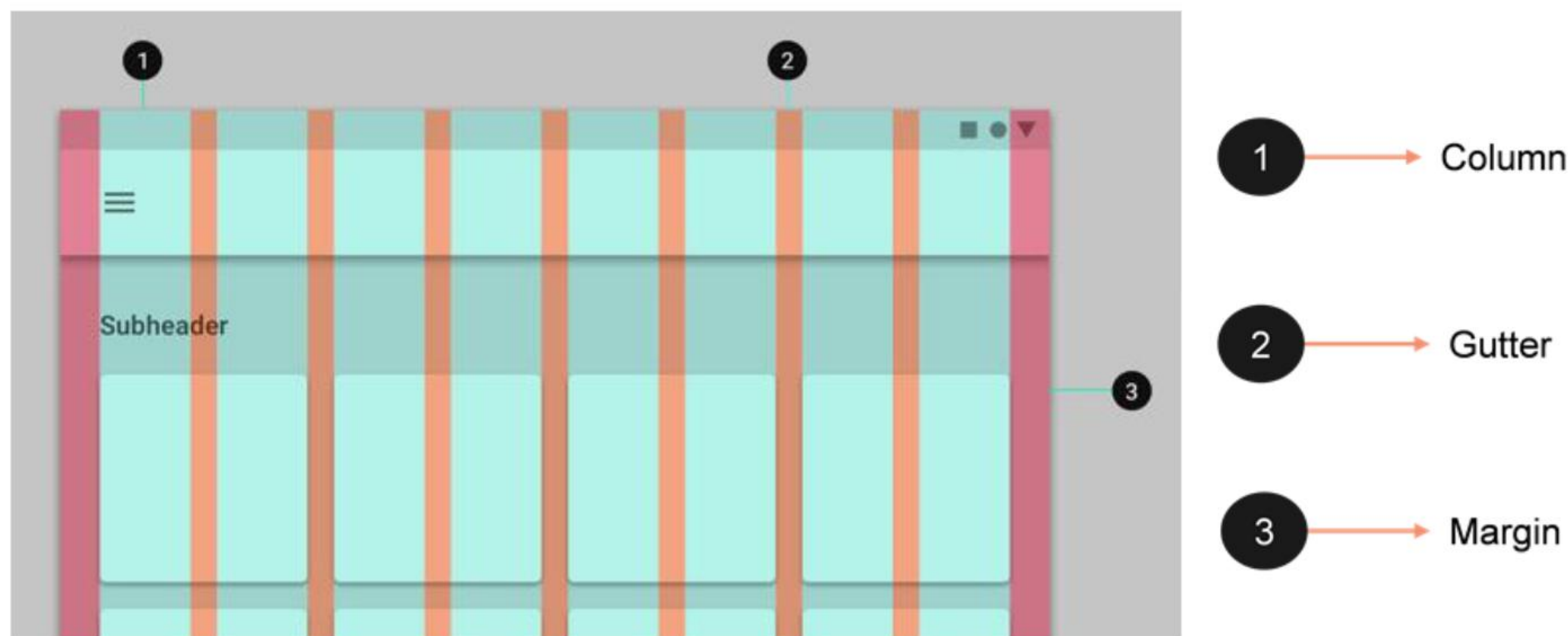
# Main Components of a Responsive Web Design



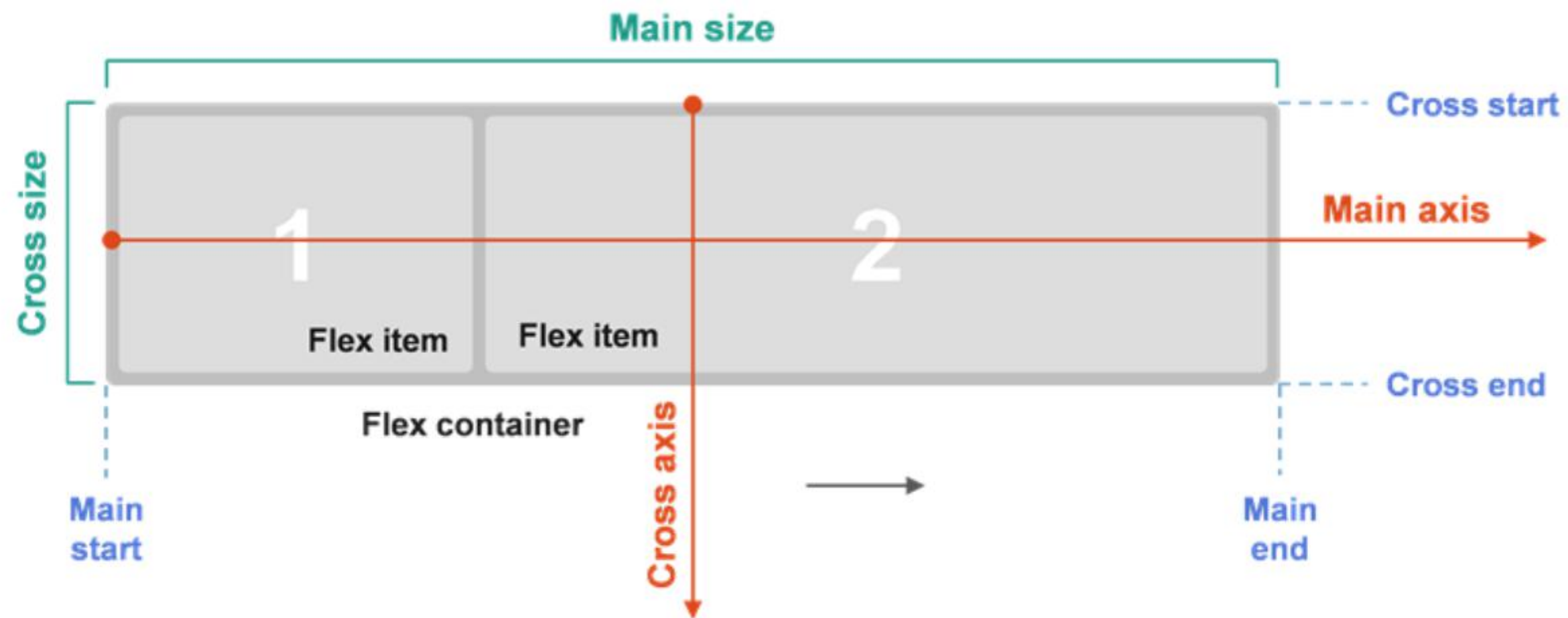


# Responsive Grid System

The responsive layout grid is made up of three items: columns, gutters, and margins. The grid system can be implemented using **Floats**, **Flexbox**, or **Grid layout**.



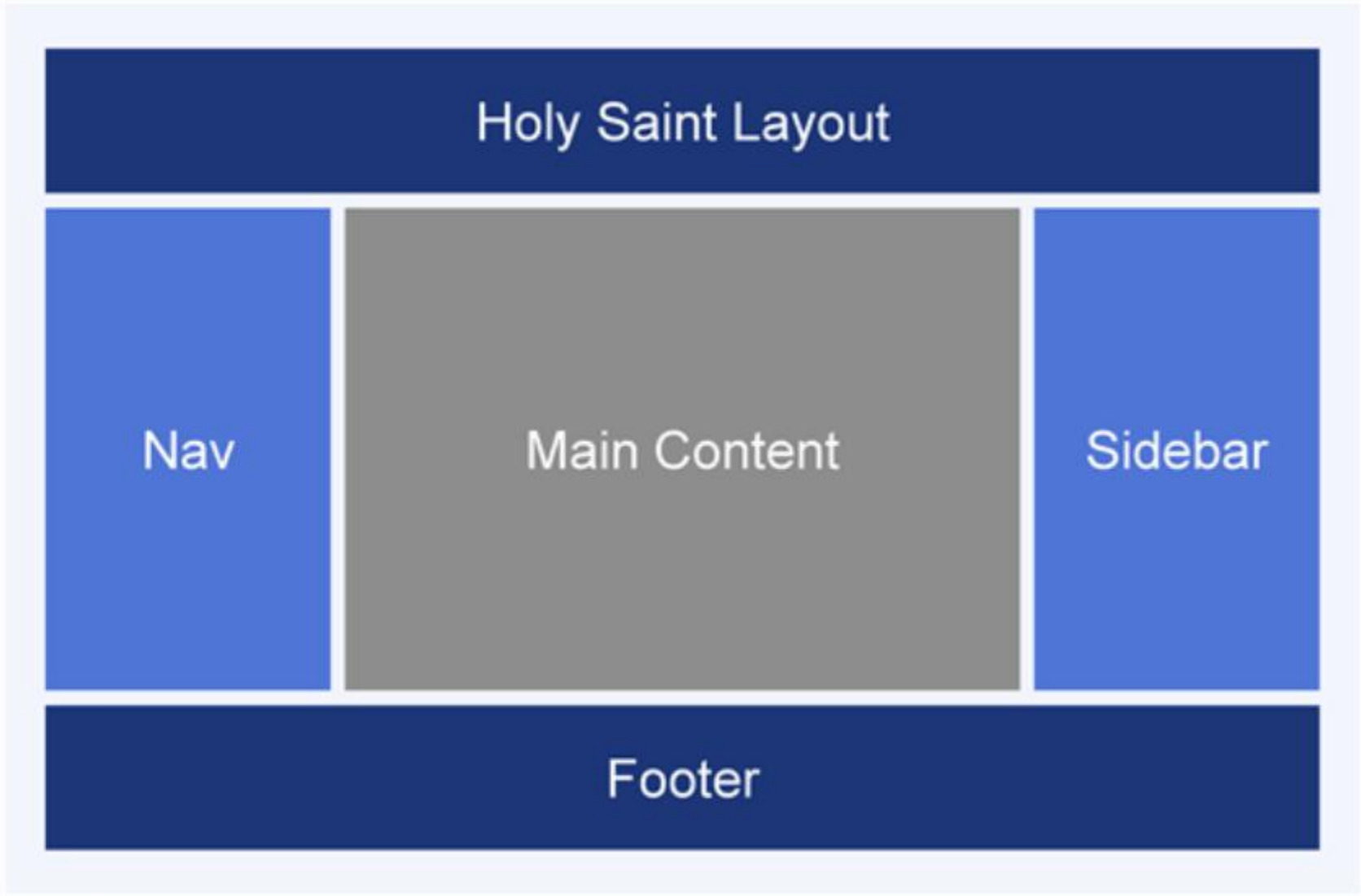
# Flex Basics Terminology



## Flex Container

```
div {  
  display: flex; /*or inline-flex*/  
}
```

# CSS Grid Layout



Grid Container

```
div {  
  display: grid;  
}
```



# Flexible Images





A media query consists of a media type and can contain one or more expressions, which resolve to either true or false.

```
@media not |  
only mediatype and (expressions) {  
  
  CSS-Code;  
  
}
```

The result of the query is "true" if the specified media type matches the type of device the document is being displayed on and all expressions in the media query are true. When a media query is true, the corresponding style sheet or style rules are applied, following the normal cascading rules.

Unless you use the "not" or "only" operators, the media type is optional, and the "all" type will be implied.

# CSS Media Queries

- Media Query gives a way to apply CSS based on a device's general type (such as sprint vs. screen) or specific characteristics (such as screen resolution or browser viewport width).
- Simple media query syntax:

```
@media media-type and (media-feature-rule) {  
    /* CSS rules go here */  
}
```

- It consists of:
  - A media type, which tells the browser what kind of media this code is for (Ex. print, or screen).
  - A media expression, which is a rule, or test that must be passed for the contained CSS to be applied.
  - A set of CSS rules that will be applied if the test passes and the media type is correct.

# Mobile-First Design Approach

Mobile-first design is a design strategy where sketching and prototyping are first done on the smallest screen and then moved to the larger screen.



# User Testing of Responsive Website

Sites like [Peek](#) or [UserTesting.com](#) provide user testing for a small fee or free. Unconventional methods such as in-the-wild testing and card sorting can also help discover unsuspected pain points.



# Self-Check

Which of the following statements is false?

- a) Flexbox is designed for a layout in one dimension.
- b) Grid is designed for a layout in two dimensions.
- c) Flexbox should be considered when we have a small design to implement and need to align the elements
- d) A grid should be considered when we have a small design to implement and need to align the elements.





# Self-Check: Solution

Which of the following statements is false?

- a) Flexbox is designed for a layout in one dimension.
- b) Grid is designed for a layout in two dimensions.
- c) Flexbox should be considered when we have a small design to implement and align the elements.
- d) **A grid should be considered when we have a small design to implement and need to align the elements.**

**Explanation:** Statement D is false because a grid is better for implementing a more complex design and for creating a gap between block elements.





## Have You Ever Wondered?

- Which websites or apps do you frequently open on your cell phones or other portable devices?
- Why do you prefer one site over others that might provide similar services?
- Do you prefer their mobile experience or desktop experience?

**Finding answers to these questions can help you find pain points that you may have never noticed during your everyday browsing.**



# Think and Tell

Can we easily add responsiveness to a fixed-width layout?



**Yes, we can.**  
**By using the popular Bootstrap framework!**  
**Let's learn about it in the next sprint.**