Summary

CSS works with Rules

```
h1 {
    color: red;
}
p {
    color: red;
}
```

Different Types of Selectors

```
h1 {…}
.some-class {…}
[disabled] {…}
#some-id {…}
* {…}
```

Selectors with Combinators

```
div + p {
    color: red;
}
div ~ p {
    color: red;
}
div > p {
    color: red;
}
div p {
    color: red;
}
```

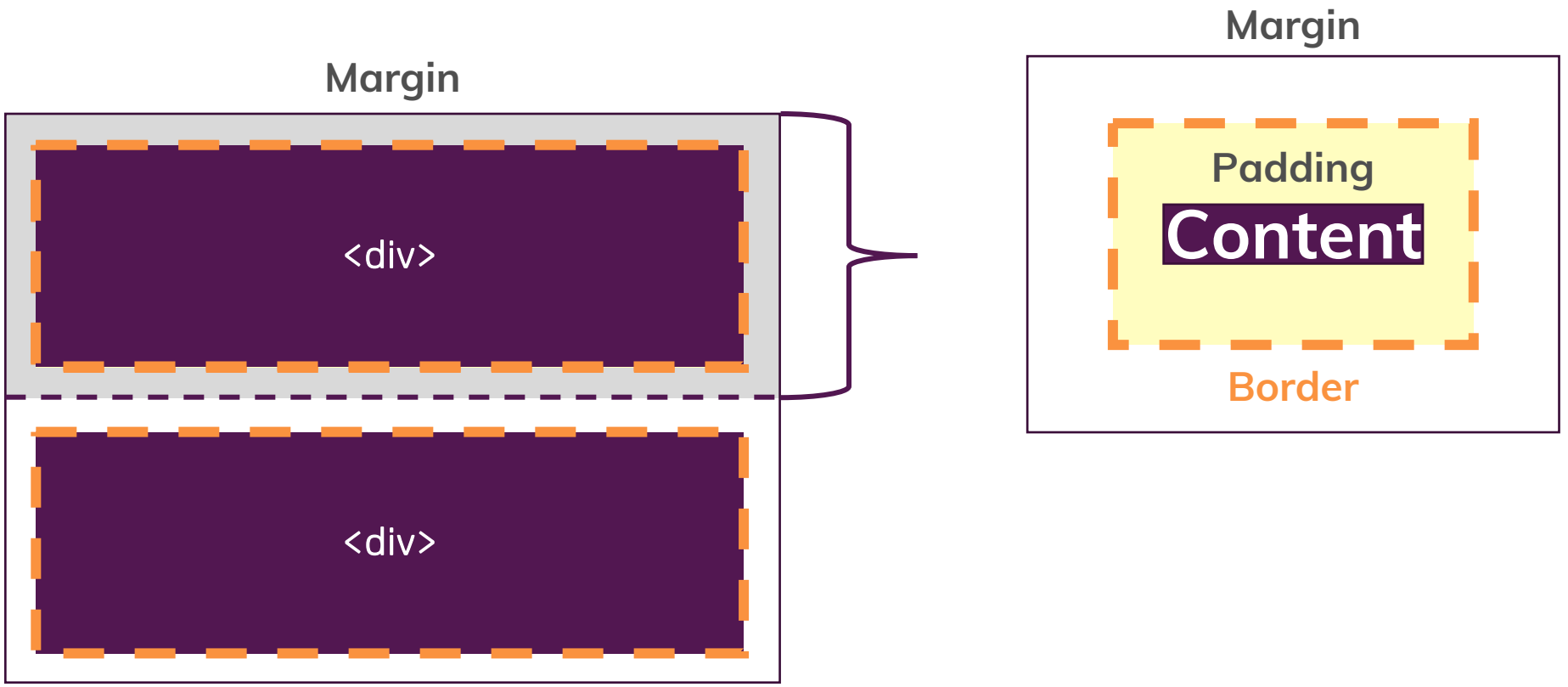
Properties & Values

- Long list of available Properties and Values
- Check MDN or comparable References
- Different Type of Values, depending on Properties

Inheritance & Specifity

- Parent styles are generally inherited
- Multiple rules can apply to one element
- Specifity resolves “multiple rules” conflicts
- Inheritance defaults can be changed

The Box Model



Understanding Combinators

+ Adjacent Sibling

```
div + p {
}
```

~ General Sibling

```
div ~ p {
}
```

> Child

```
div > p {
}
```

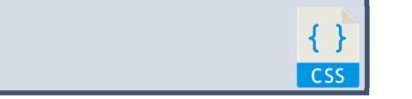
Descendant

```
div p {
}
```

Combinators – Adjacent Sibling

+ Adjacent Sibling

```css
h2 + p {
   color: red;
}
```



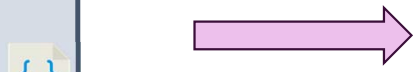
```html
<div>
   <h2>Not applied</h2>
   <p>CSS applied</p>
   <h2>Not applied</h2>
   <h3>Not applied</h3>
   <p>Not applied</p>
   <h2>Not applied</h2>
   <p>CSS applied</p>
</div>
```

- Elements share the same parent
- Second element comes **immediately** after first element

Combinators – General Sibling

~ General Sibling

```css
h2 ~ p {
   color: red;
}
```



```html
<div>
   <h2>Not applied</h2>
   <p>CSS applied</p>
   <h2>Not applied</h2>
   <h3>Not applied</h3>
   <p>CSS applied</p>
</div>
```

- Element share the same parent
- Second element comes after first element

Combinators – Child

Child

```css
div > p {
   color: red;
}
```

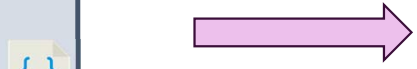
```html
<div>
   <div>Not applied</div>
   <p>CSS applied</p>
   <div>Not applied</div>
   <article>
      <p>Not applied</p>
   </article>
   <p>CSS applied</p>
</div>
```

Second element is a direct child of first element

Combinators – Descendant

Descendant

```css
div p {
   color: red;
}
```



```html
<div>
   <div>Not applied</div>
   <p>CSS applied</p>
   <div>Not applied</div>
   <article>
      <p>CSS applied</p>
   </article>
   <p>CSS applied</p>
</div>
```

Second element is a descendant of the first element

Inheritance

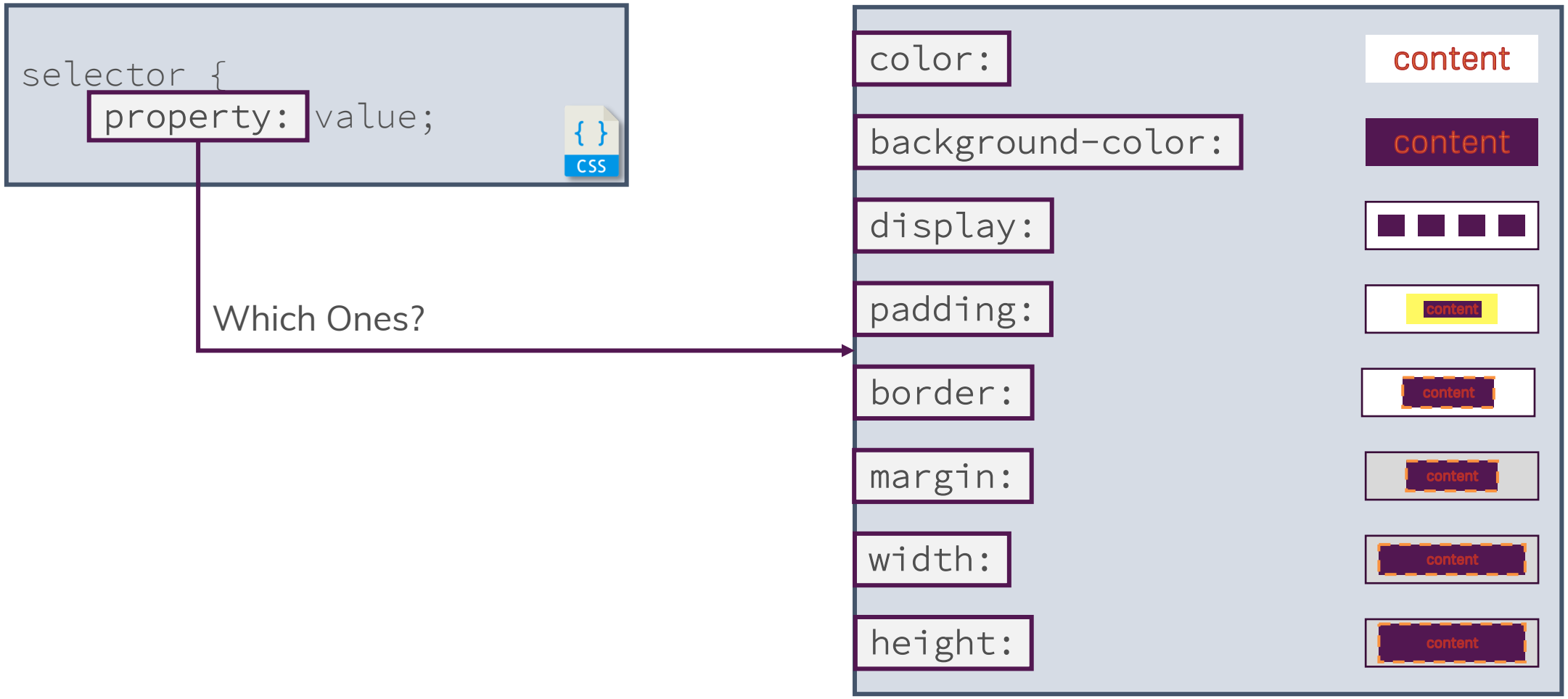
```css
div {
    color: red;
}
```

```css
p {
    color: green;
}
```

```html
<div>
    <div>
        <h1>Inherited!</h1>
    </div>
    <p>Overwritten</p>
    <div>Inherited!</div>
    <article>
        <p>Overwritten</p>
    </article>
    <p>Overwritten</p>
</div>
```

Parent styles are inherited by child elements if not overwritten!

Properties Worth to Remember



More about Selectors

Elements

Set equal style for these elements

```html
<h1>Our header</h1>
<p>The Blog Post</p>
<div>More Info</div>
```

```css
h1 {
   color: red;
}
```

Classes

Set equal style for elements within the same class

```html
<h1 class="blog-post">
Our header</h1>
<p class="blog-post">
The blog post</p>
<div class="blog-post">
More info</div>
```

```css
.blog-post {
   color: red;
}
```

Universal

```html
<h1>Our header</h1>
<p class="blog-post">The
blog post</p>
```

```css
* {
   color: red
}
```

Rarely use this one!

More about Selectors

IDs

➡ Set style to one specific element

```html
<h1 id="main-title">Our header</h1>
```

```css
#main-title {
    color: red;
}
```

Attributes

⇨ Set equal styles to all elements with attribute(s)

```html
<button disabled>
    Click
</button>
```

```css
[disabled] {
    color: red;
}
```

Shorthand Properties

Combine values of multiple properties in a single property (the shorthand property)

Separate properties

```
border-width: 2px
border-style: dashed | solid
border-color: orange
```

```
margin-top: 5px
margin-right: 10px
margin-bottom:5px
margin-left: 10px
```

Shorthand property

```
border: 2px dashed orange
```

```
margin: 5px 10px 5px 10px;
```

top right bottom left

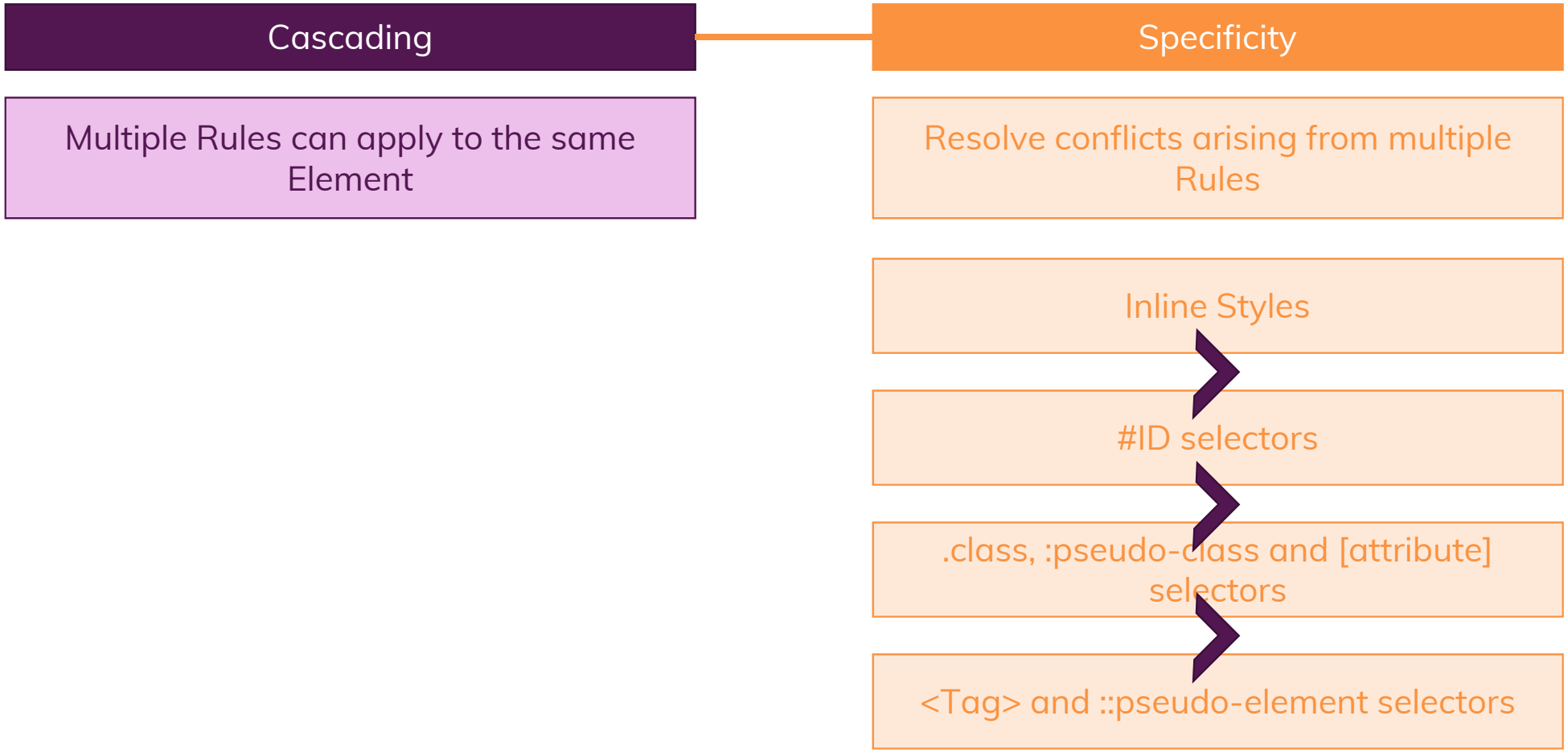
```
margin: 5px 10px;
```

top & bottom

left&right

```
margin: 10px;
```

Cascading Style Sheets & Specificity



Cascading Style Sheets & Specificity

Cascading

Multiple Rules can apply to the same Element

Specificity

Resolve conflicts arising from multiple Rules

Selector Hierarchy

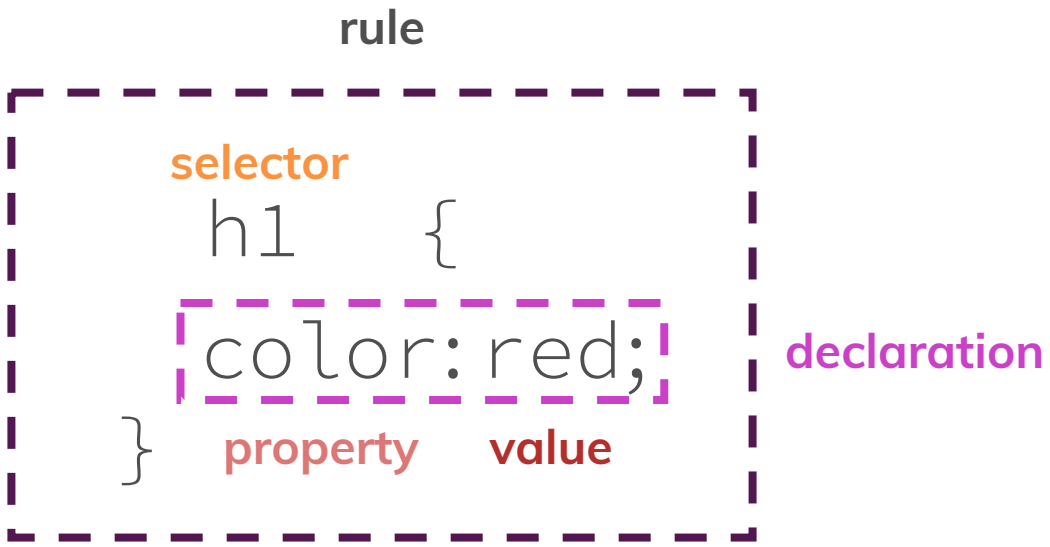
Directly applied Styles win over Inheritance

`p {…} > div {…}` for `<div><p>Hi!</p></div>`

More specific Selector wins over less specific one

`p.some-class {…} > p {…}` for `<p class="some-class">Hi!</p>`

Understanding the CSS Syntax



Value Types

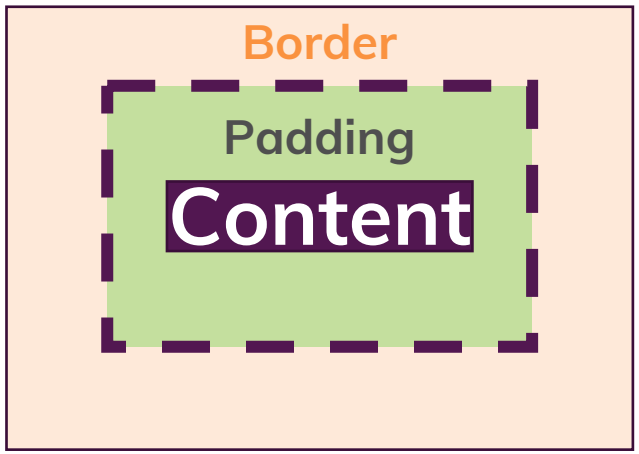
Values are tightly coupled to specific property!

Pre-defined Options	Colors	Length, Sizes & Numbers	Functions
`display: block;`	`background: red;`	`height: 100px;`	`background: url(…);`
`overflow: auto;`	`color: #fa923f;`	`width: 20%;`	`transform: scale(…);`
	`color: #ccc;`	`order: 1;`	

Possible Values can be found in CSS References (e.g. MDN)!

Summary

The Box Model



Styling Width & Height

- `px` or `%` (or other units)
- `%` refers to container
- `width` and `height`
- `box-sizing` can be `content-box` (default) or `border-box`

Pseudo Classes & Elements

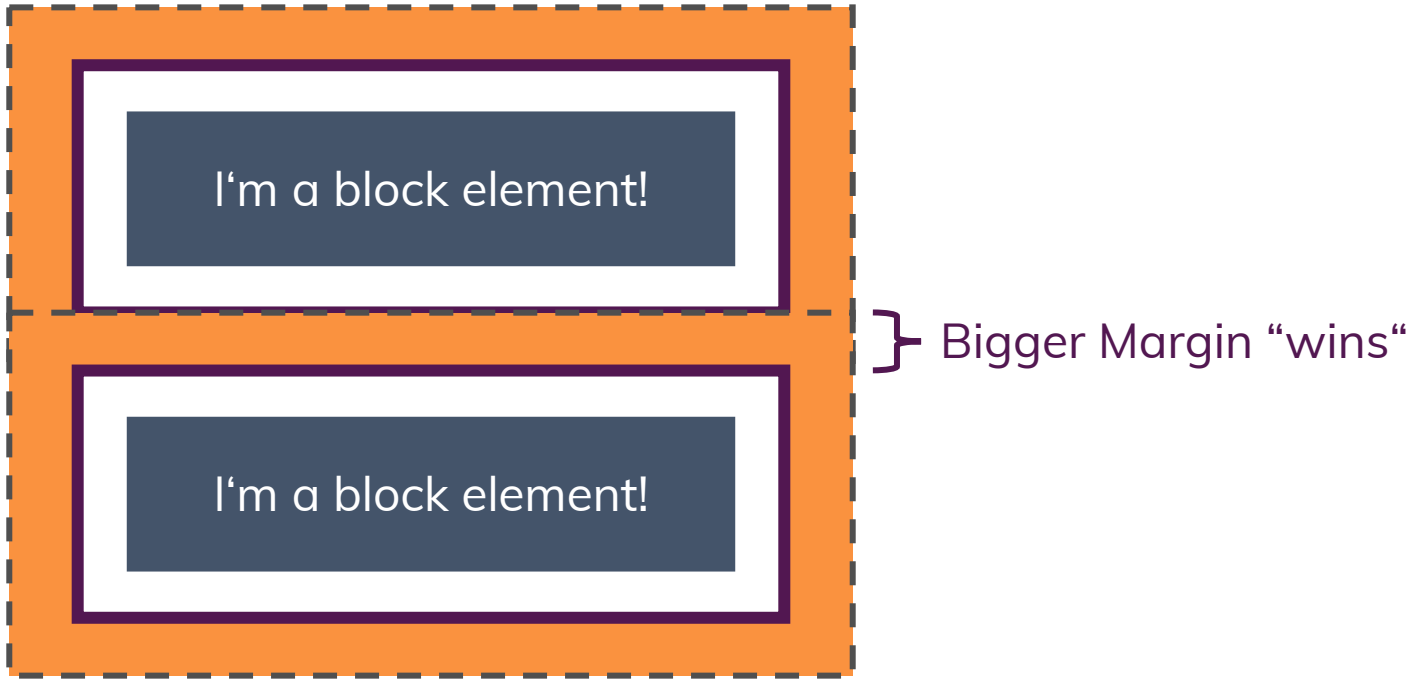
```
:hover
:active
:first-of-type

::after
::first-letter
```

The “display” Property

- Control behavior (`block` vs `inline`) of elements
- Mix behavior via `inline-block`
- Remove elements via `none`

Margin Collapsing



In General: Use either `margin-top` or `margin-bottom`

Summary

CSS Class Selectors

- You can apply more than one class to an element
- You can chain selectors (e.g. `a.active`, `.priority.highlighted`)
- Class selectors are the most-used type of CSS selectors

!important

- Important: Don't use `!important` in 99% of cases

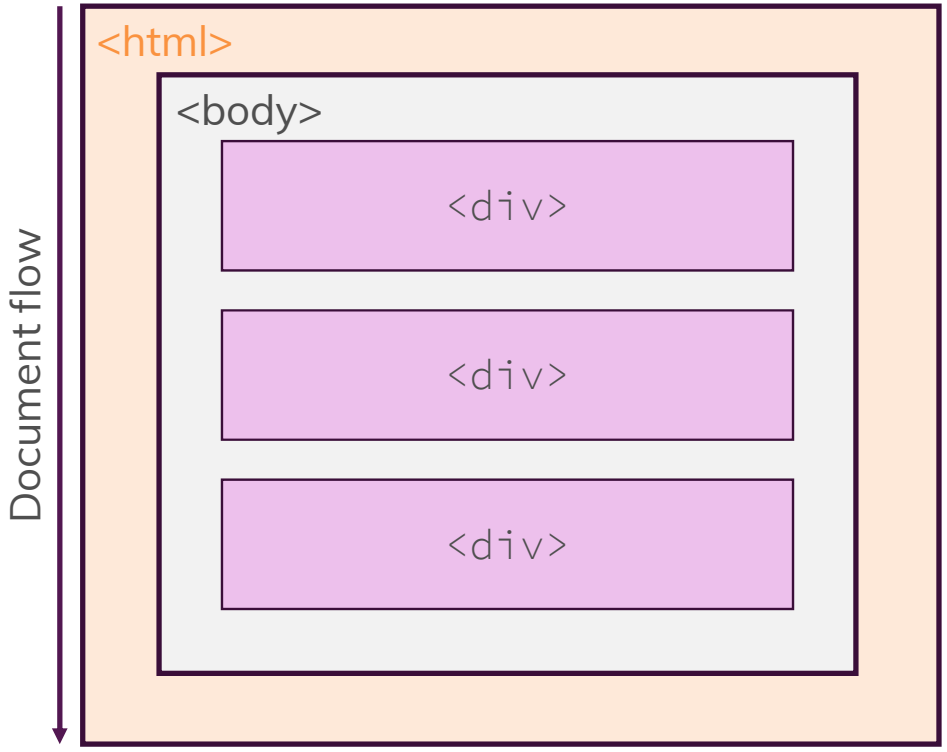
Pseudo Selectors & :not

- You use the same pseudo-selectors in most cases (`:hover`, `:active`)
- Explore your possibilities to solve edge cases with ease
- Use `:not` with caution but when needed to exclude certain elements

Positioning

How to change the position of elements

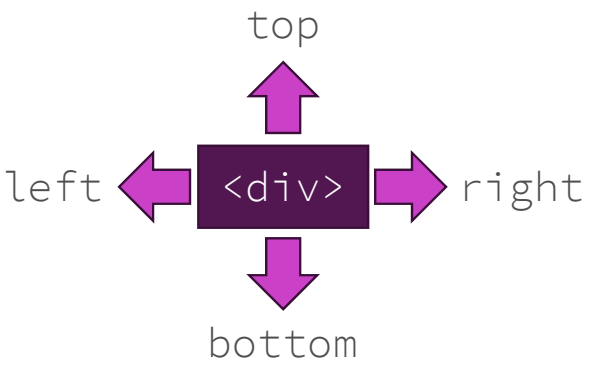
Positioning Elements



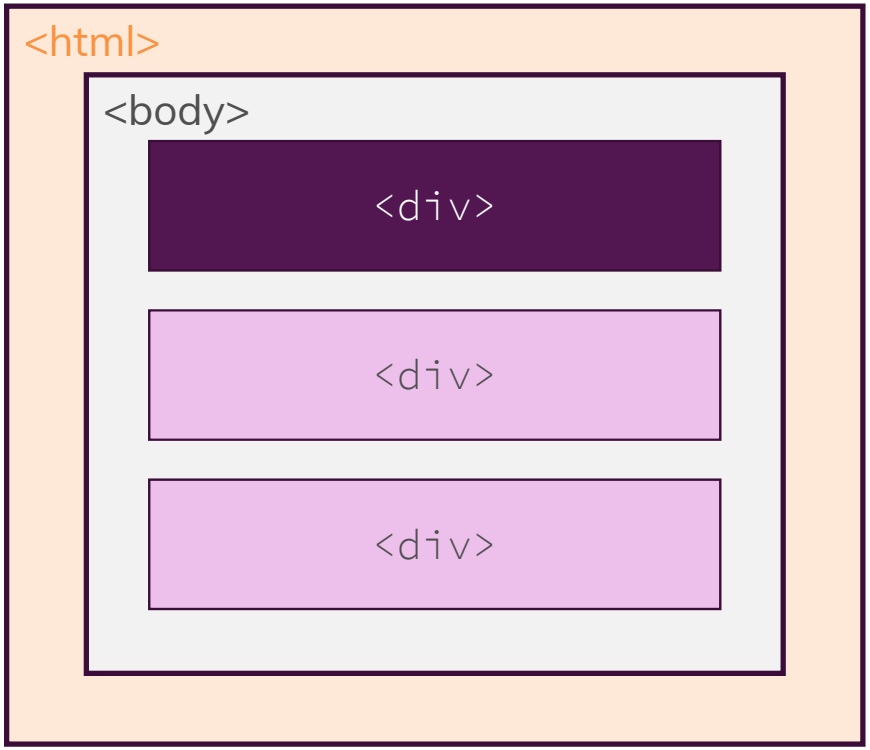
position:

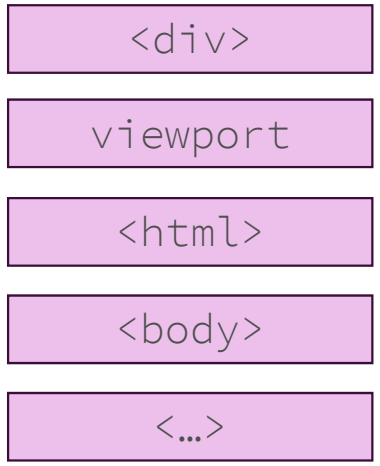
- static → Default
- absolute
- relative
- fixed
- sticky

Changing the Position



Document Flow





Positioning Context

Summary

The “position” Property

`static (default)`
`fixed`
`absolute`
`relative`
`sticky`

Positioning Context

- Defines the anchor point for your position change
- The viewport for `fixed`
- Another element for `absolute`
- The element itself for `relative`
- The viewport and another element for `sticky`

The “Document Flow”

- The default positioning behaviour of html elements
- Can be changed with `position`
- Elements can remain in the document flow or be excluded from it

Stacking Context

- Created when applying `fixed/ sticky` or `absolute/ relative` in combination with `z-index`
- Defines stacking behaviour of child elements

Moving Elements

- `top`
- `bottom`
- `left`
- `right`

Z-Index

- Changes the default element positioning along the z-axis
- `auto (0)` as default value
- Changes only possible when `position` is applied
- Larger value = element is positioned on top of other elements

Summary

The “background” Property

`background-image`
`background-color`
`background-position`
`background-size`
`background-origin`
`background-clip`
`background-repeat`
`background-attachment`

Gradients

- Linear and radial gradients
- Linear gradients: Direction + color stops
- Radial gradients: shape, size, position and color stops

The “background” Shorthand

- Watch out for `background-position` and `background-size` (`center`/`cover`)
- As all shorthands: Overwrites other properties

Multiple Backgrounds

- You can stack background images (only one solid color which has to be at the bottom)
- Using transparency can create cool effects

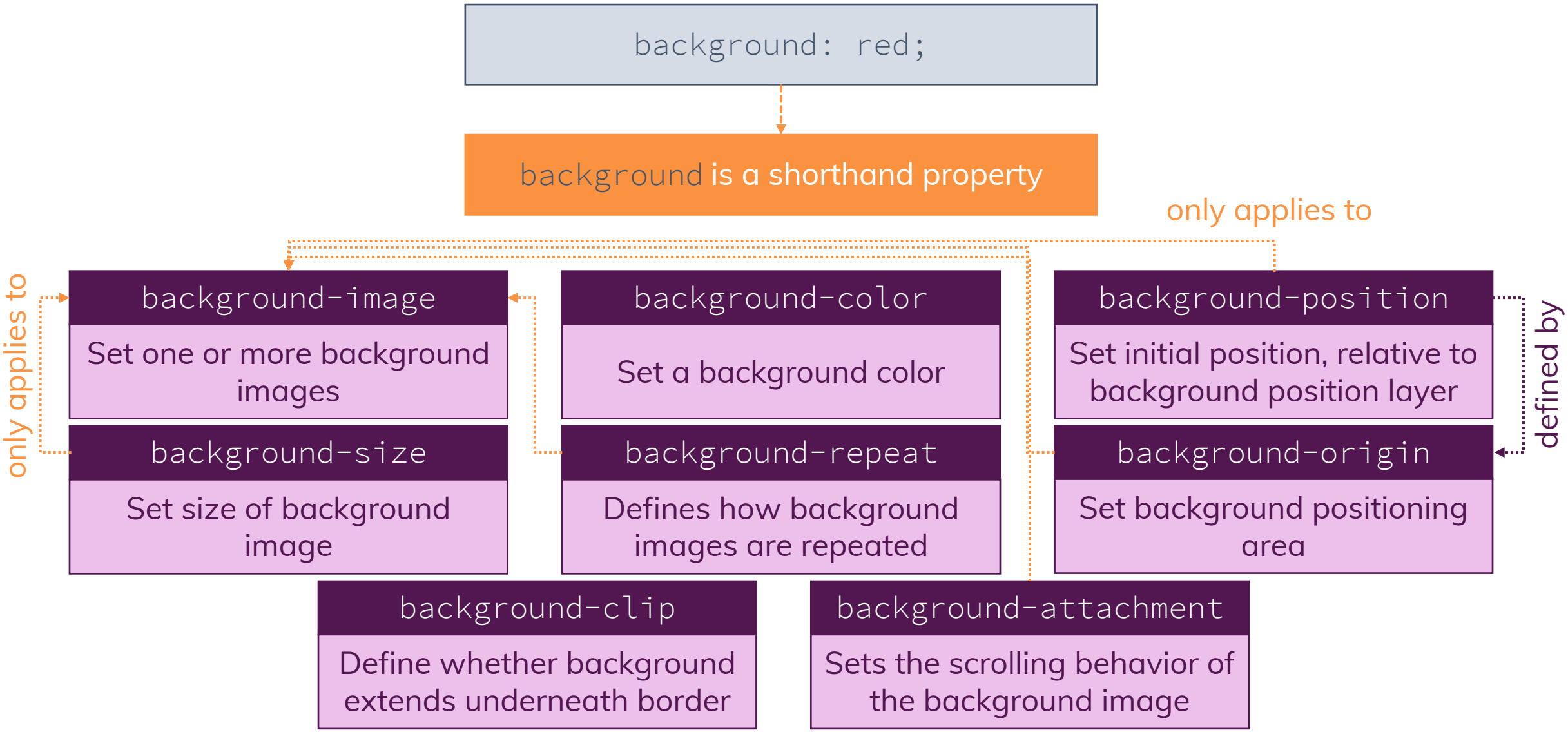
Filters

- Easily add visual effects to boxes
- Affect all content

<img> vs background-image

- `<img>` is better for accessibility but way more difficult to style
- `background-image` can be sized and positioned easier

The Background Property

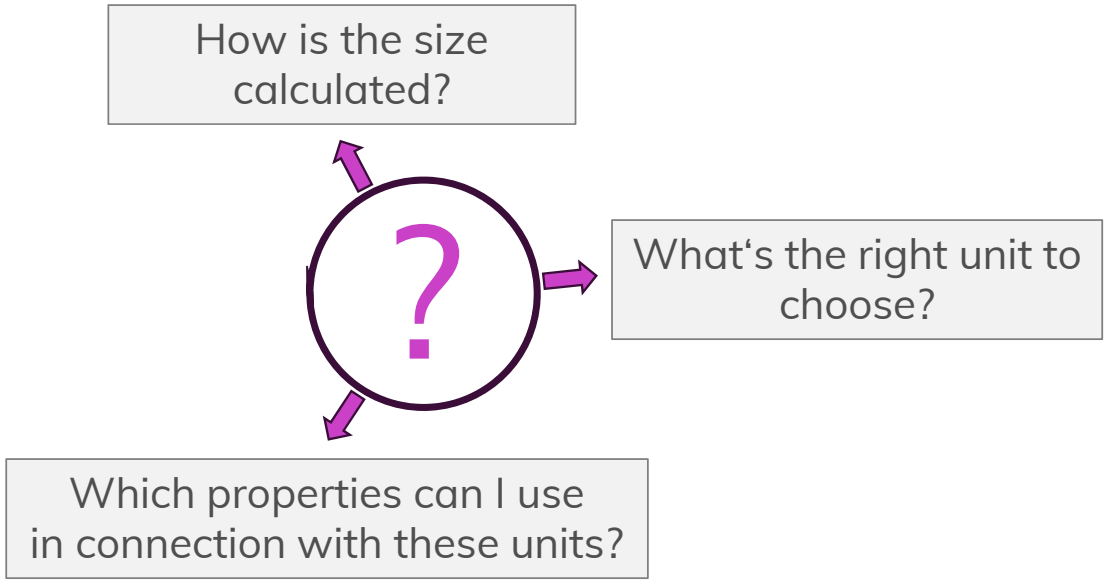


Dimensions, Sizes & Units

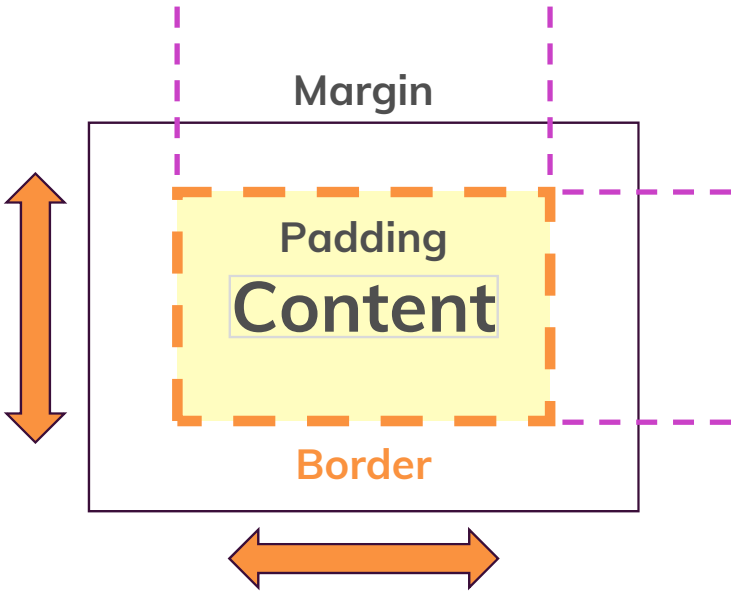
Because there is more than "px"

Pixels, Percentages & More

Units	
pixels	px
percentages	%
root em	rem
em	em
viewport height	vh
viewport width	vw



Where Units Matter



Which properties can I use?	
`font-size`	
`padding`	`border` `margin`
`width`	`height`
`top`	`bottom`
`left`	`right`

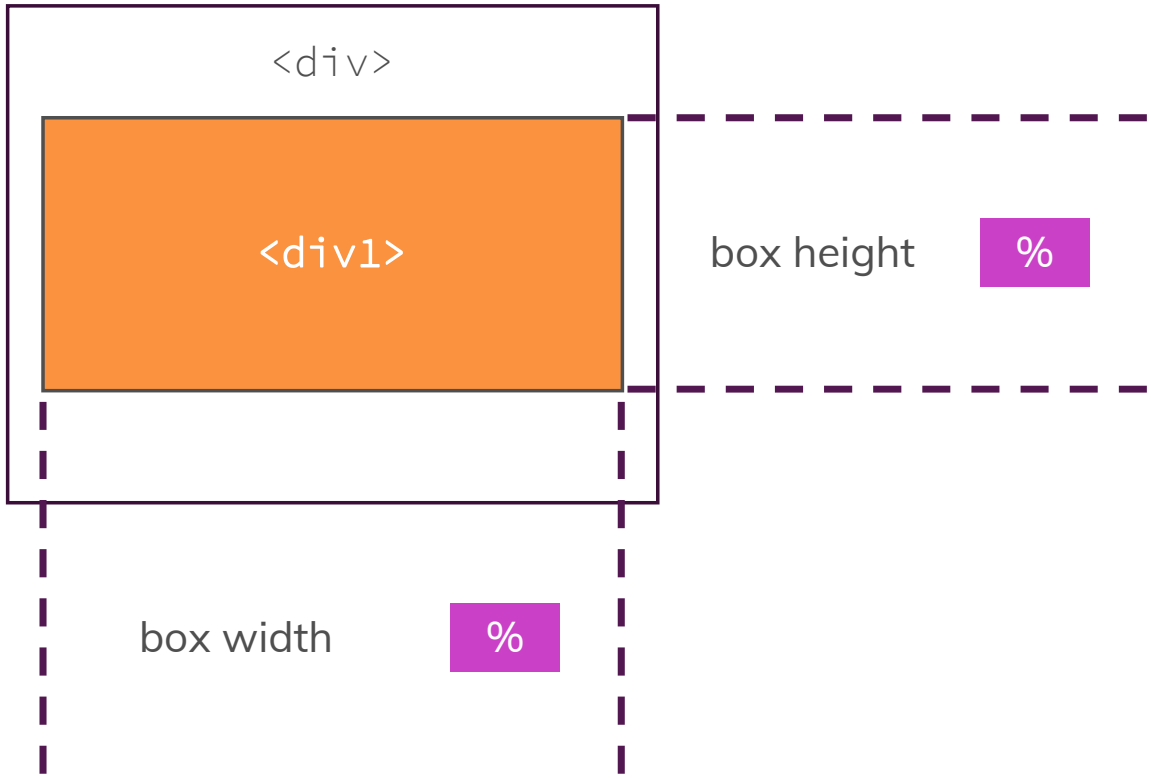
How is the Size Calculated?

Absolute Lengths	Viewport Lengths	Font-Relative Lengths
Mostly ignore user settings	Adjust to current viewport	Adjust to default font size
px	vh	rem
cm	vw	em
mm	vmin	...
...	vmax	
	%	

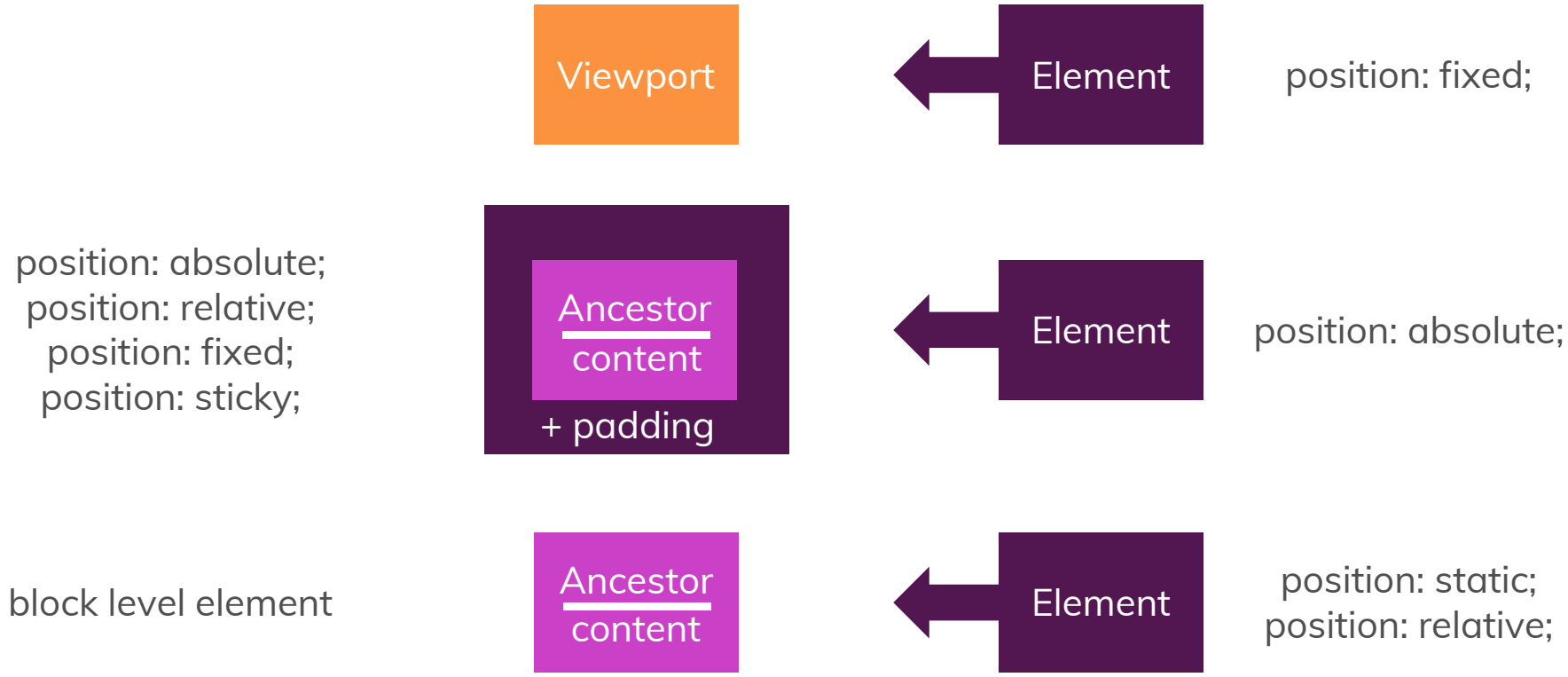
Special Case

How is the Box Size for % Units Calculated?

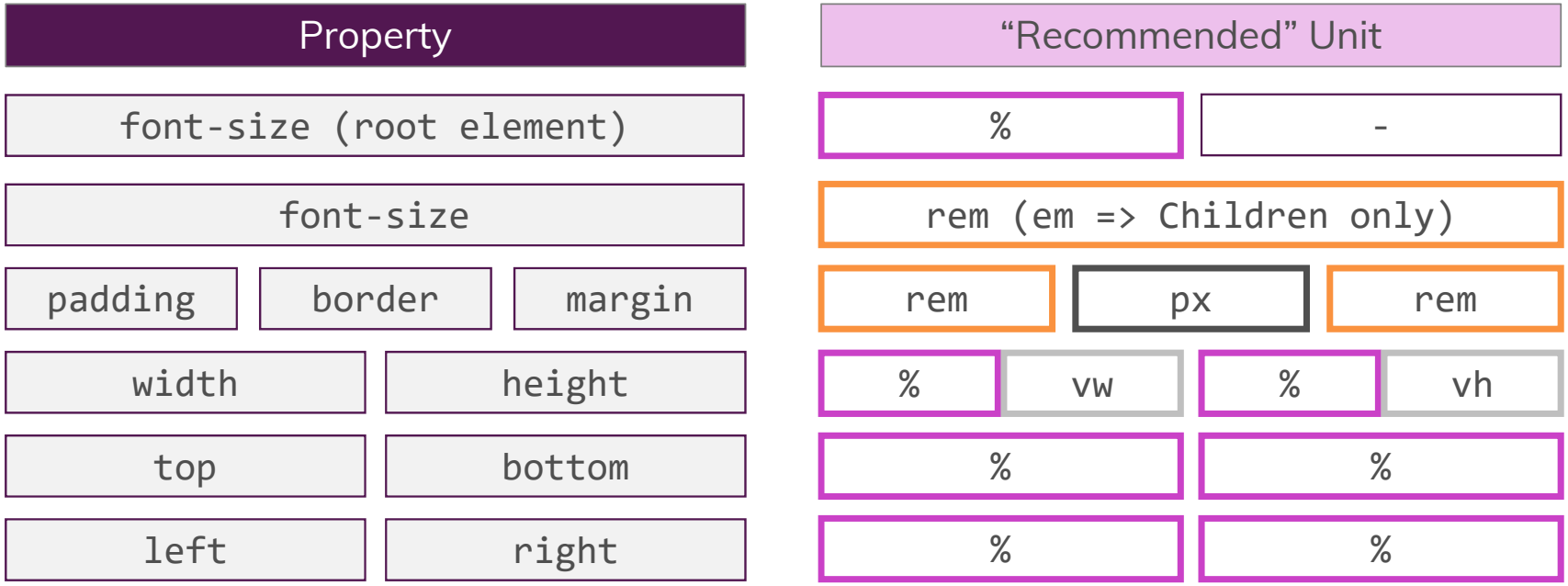
?



3 Rules to Remember



Which Unit Should I Choose?



Summary

Units

`pixels (px)`
`percentages (%)`
`rem & em`
`viewport (vh % vw)`
`auto`

Min/Max-Width

- Always use these in combination with the `width` property
- Set `width` to a relative value (e.g. %) and the `min/max` value to `px` to limit the element size
- Also available for `height`

The Containing Block

- The reference point when applying % units to an element
- Depends on the position property applied to this element
- Can be the closest ancestor or the viewport

Em & Rem

- Sizes always depend on the font-size of the root element (`rem`) or the element itself (`em`)
- Not restricted to `font-size`

100% Height

- The element itself and the ancestors use position `static/relative` => 100% height is not working
- Adding 100% height to all ancestors fixes this issue
- Position `fixed/absolute` or using viewport units (vw or vh) as alternatives

Summary

Accessing Style Properties

- Access CSS styles on DOM elements via the `style` property
- Access via camelCase notation (e.g. `backgroundImage`) or by using strings (e.g. `'background-image'`)

Add & Remove CSS Classes

- Use `className` or `classList`
- `classList` is easier and more flexible

Responsive Design

Let‘s make our page look awesome on all devices

Which Tools do we Have?

Viewport

Adjust site to device viewport

No design changes

Media Queries

Change design depending on size

Design changes defined by us

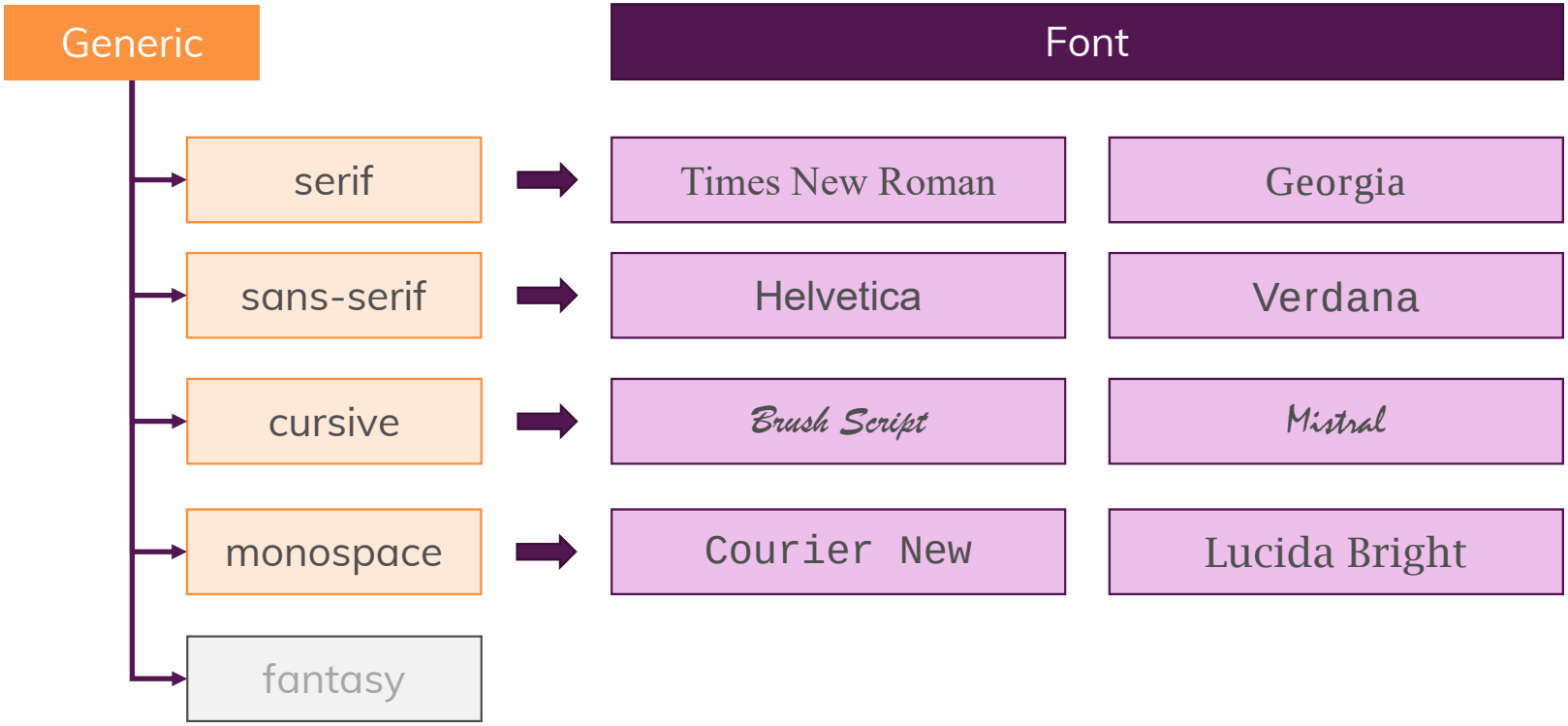
Summary

Responsive Design	The Viewport Metatag	Media Queries
• Required to ensure that our website looks beautiful on all devices	• Should be added to your HTML files to adjust the viewport to device size • Converts „hardware pixels“ into „software pixels“ and therefore takes into account the actual device width	• Allow us to change properties and therefore the entire design depending on device widths/heights • Added to the CSS code with @media

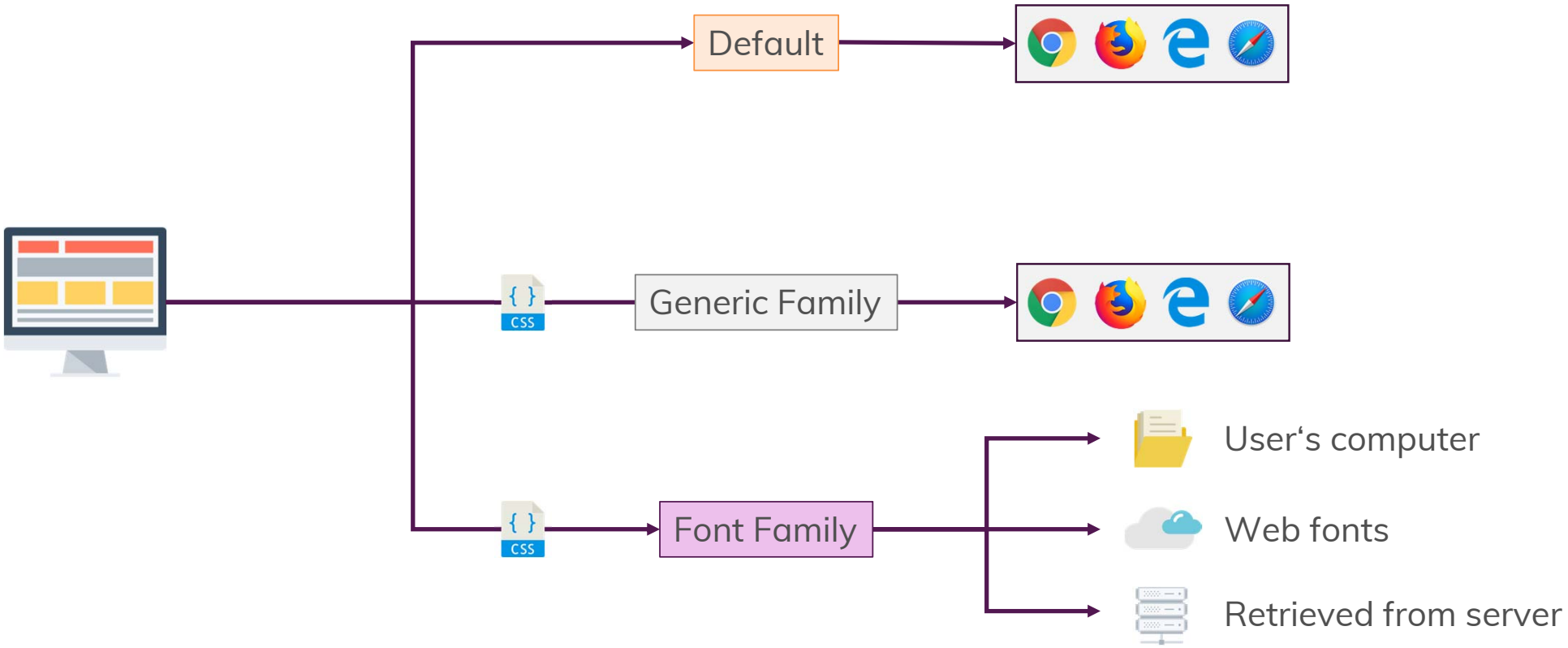
Working with Text and Fonts

How we can make our information look beautiful

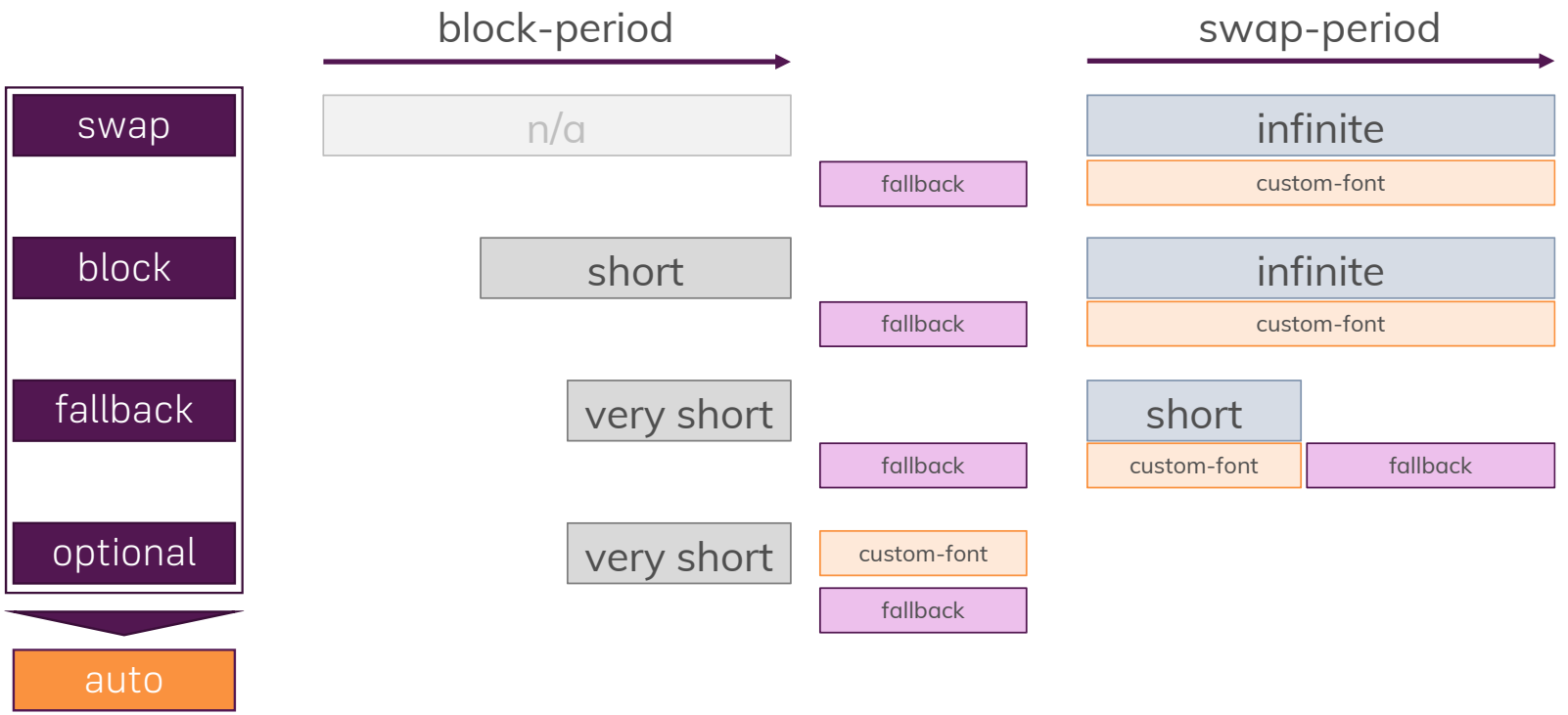
Generic Families & Font Families



What will be displayed?



font-display:



Summary

Generic & Font Families

- Generic families as fallback in case font family is not available
- Define exact font by using a specific font family

“font-display”

- Define the font family loading behaviour to ensure fonts are immediately visible for the user
- Available values mainly differentiate in block-period and swap-period

Importing Font Families

- Font families must be available to be displayed correctly on the browser
- Locally installed font families vs. embedded font-families with `@font-face`
- Import font families from Google Fonts

The “font” Shorthand

- Apply font family according to available systems fonts
- Shorthand for muliple font properties
- `font-size` & `font-family` are obligatory

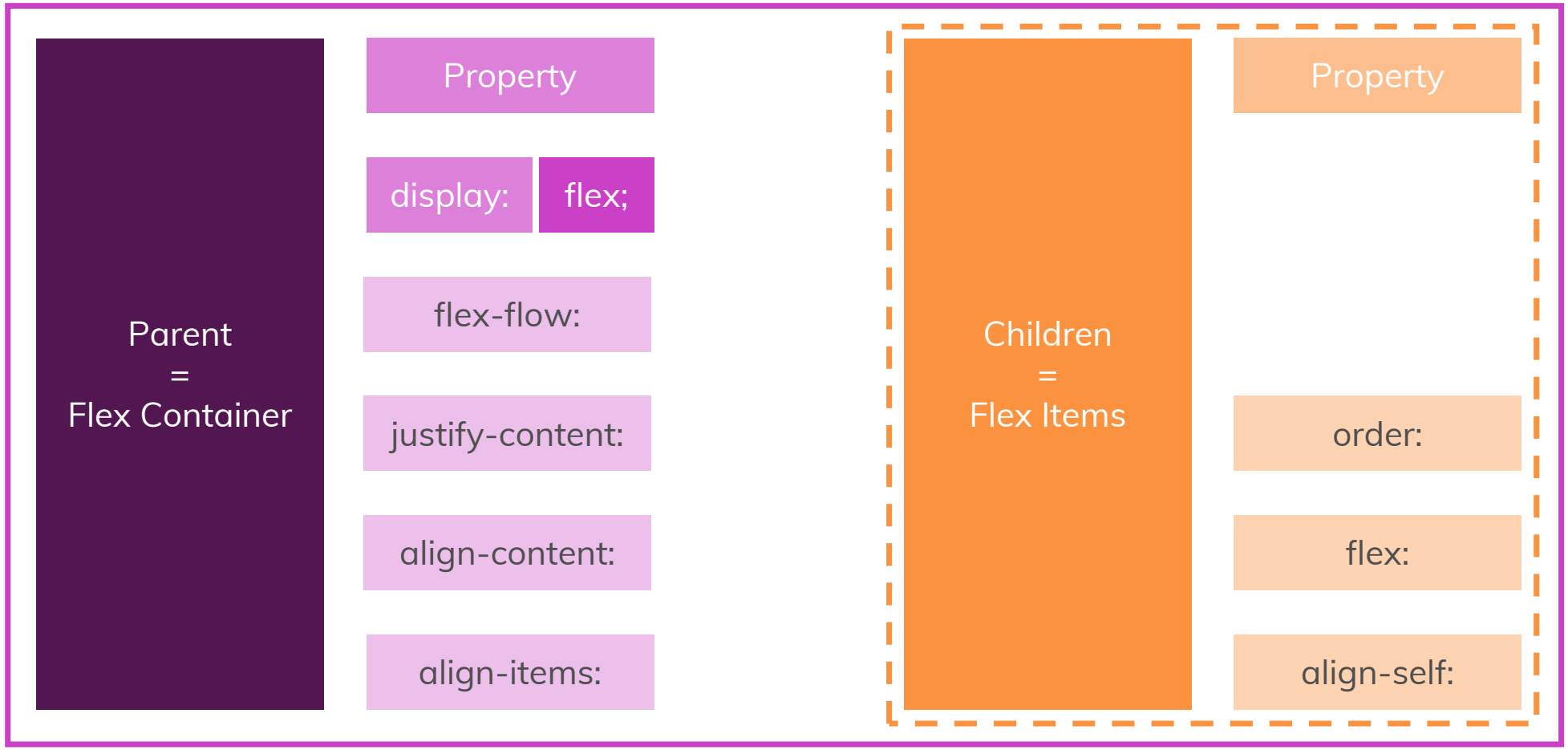
The “font” Properties

```
font-size
font-style
font-weight
font-stretch
font-variant
----------------------
letter-spacing
white-space
line-height
text-decoration
text-shadow
```

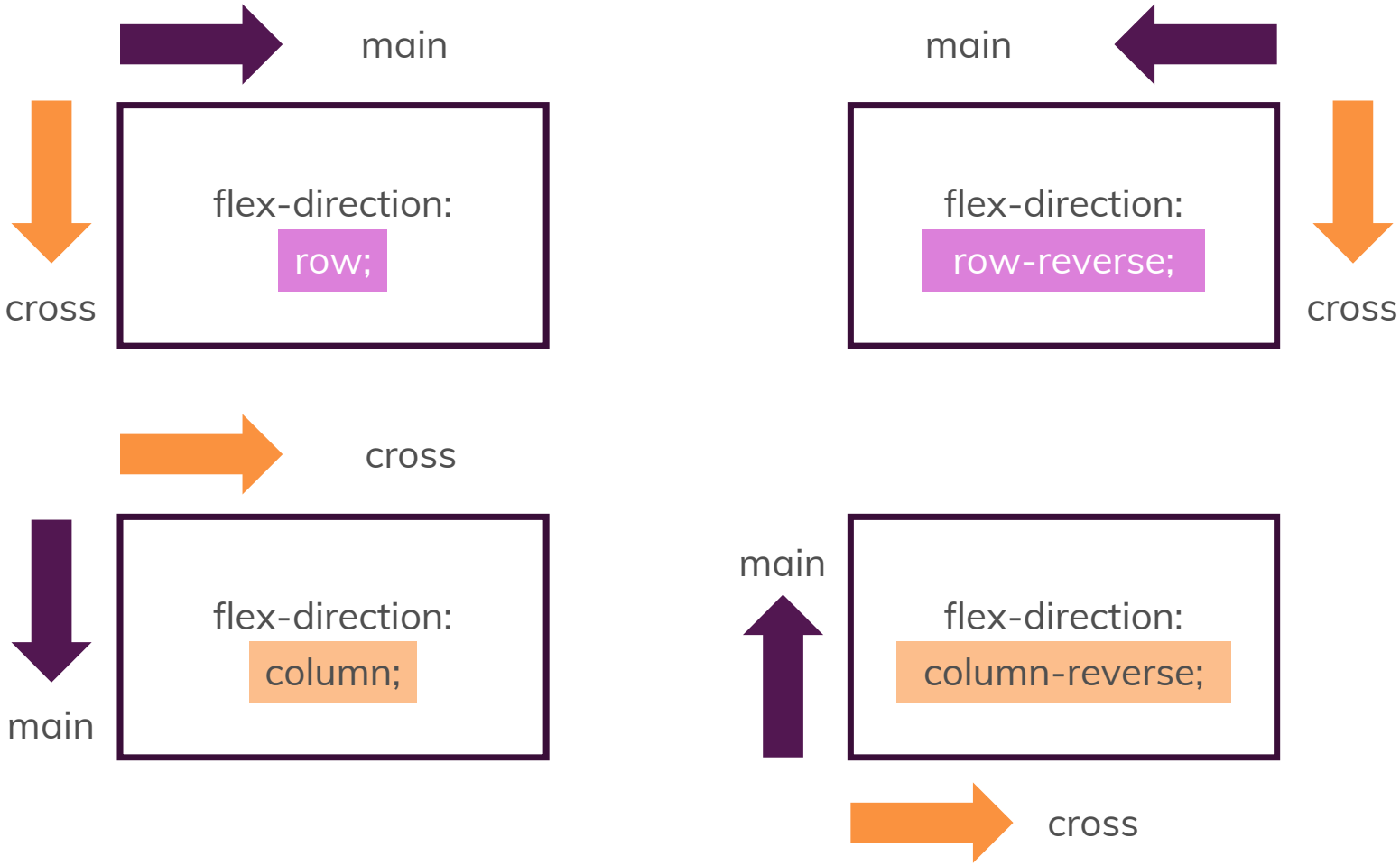
Working with Flexbox

The modern way to change the way
our elements are displayed

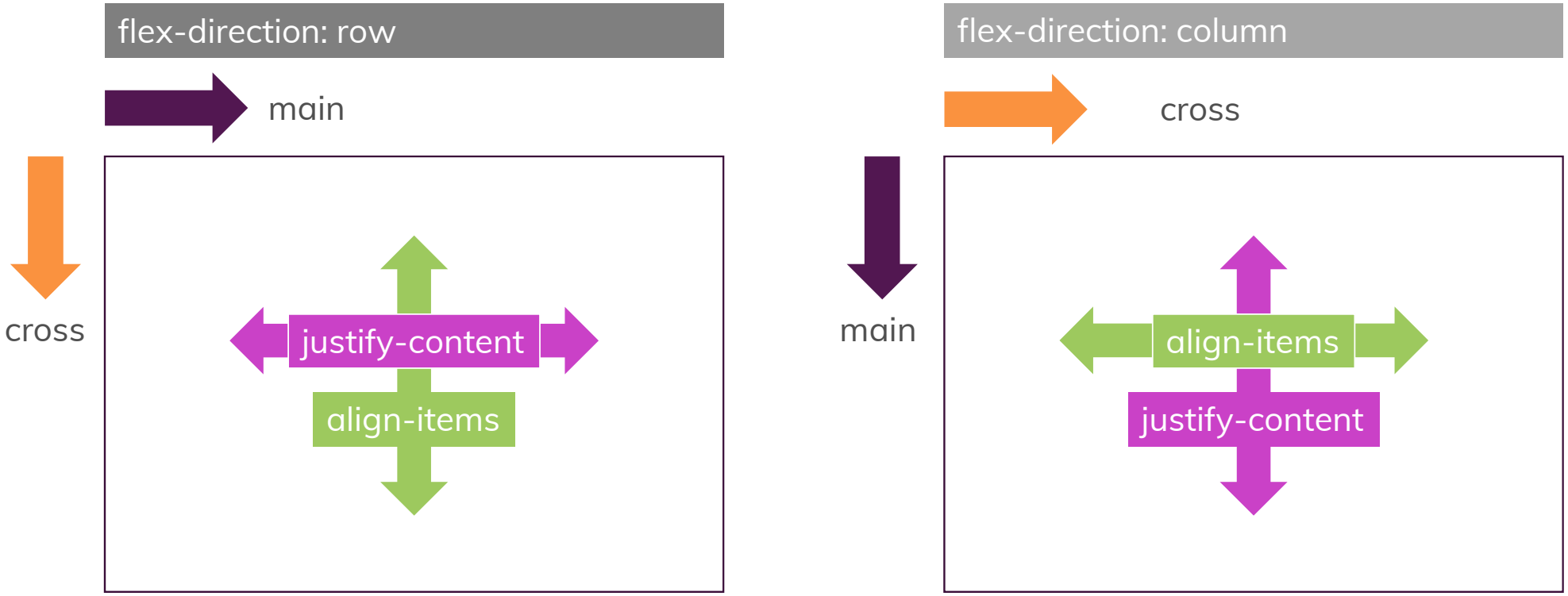
Understanding Flexbox



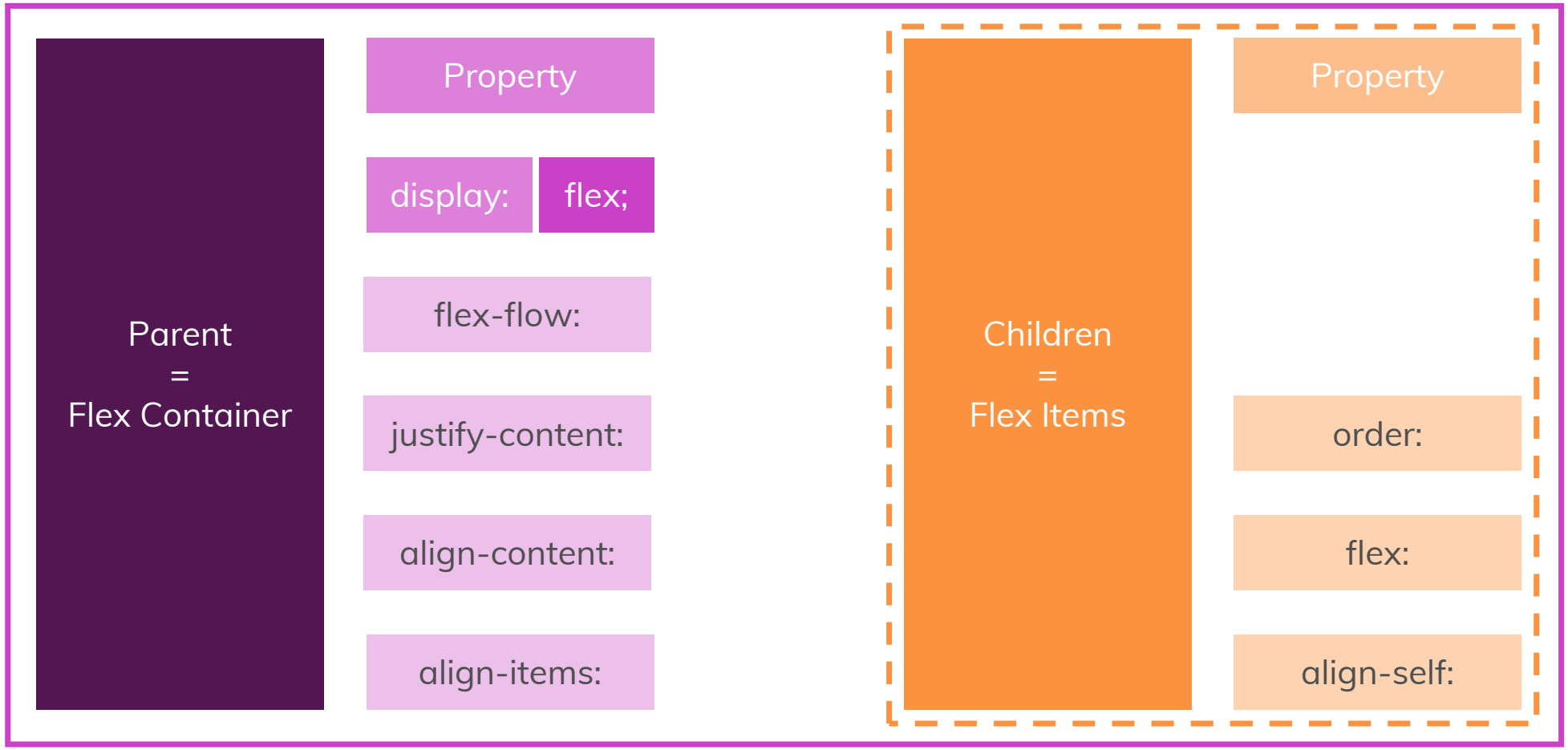
Main Axis vs. Cross Axis



Align Items and Justify Content



Understanding Flexbox



Summary

Flexbox

- Changes the way elements are displayed on a website
- Flexbox consists of the Flex-Container and Flex-Items

Main Axis vs Cross Axis

- `flex-direction` defines main axis
- Properties refer to main or cross axis
- Behaviour of Flex-Items changes depending on `flex-direction`

Flex Container

- Adding `display: flex` to an element will turn it into a Flex-Container

Flex Items

- All elements/children of the Flex-Container will become Flex-Items
- Behaviour can be changed by properties applied to the Flex-Container and applied to individual Flex-Items

Flex Container - Properties

```
display: (inline-)flex
flex-direction
flex-wrap
flex-flow (shorthand)
align-items
justify-content
align-content
```

Flex Items - Properties

```
order
align-self
flex-grow
flex-shrink
flex-basis
flex (shorthand)
```

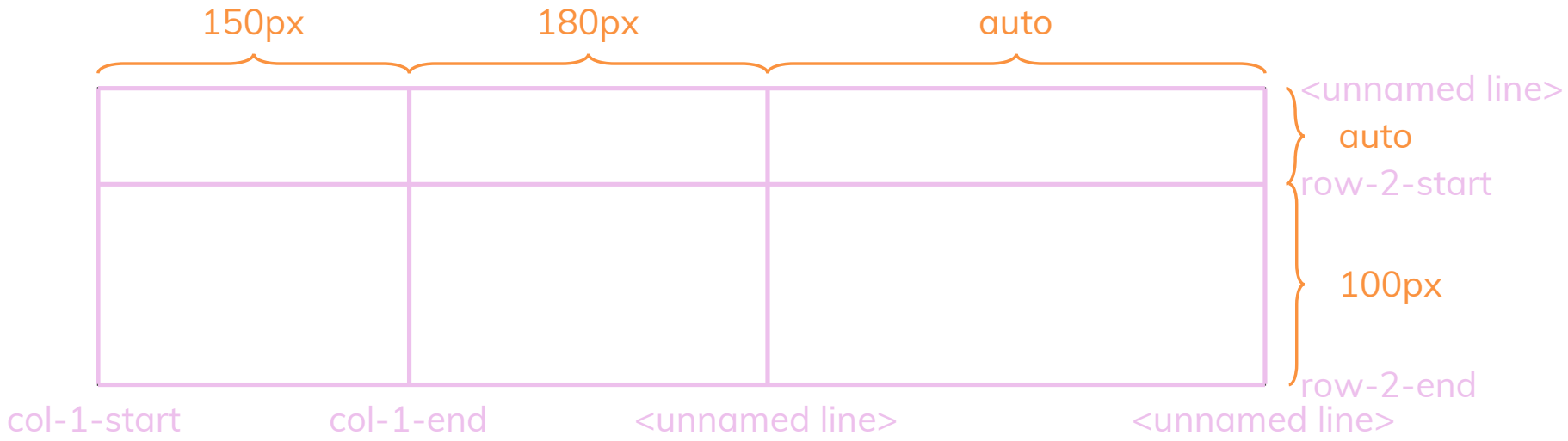
Grid Templates

```css
.grid-contai
  height: 140px;
  display: grid;
  grid-template-columns: [col-1-start] 150px [col-1-end] 180px auto;
  grid-template-rows: auto [row-2-start] 100px [row-2-end];
}
```

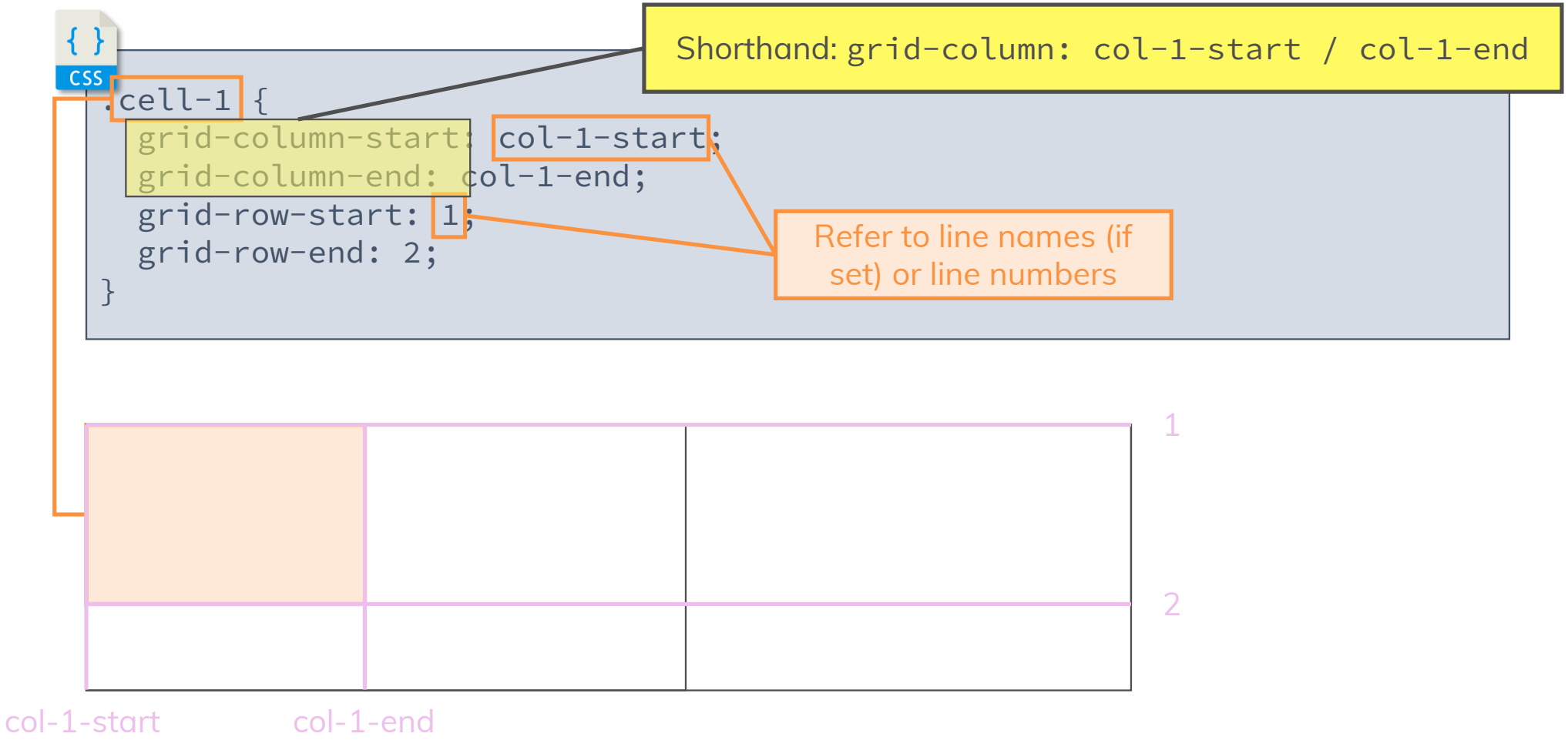
Turn into a grid

Assign name to line

Assign width/height

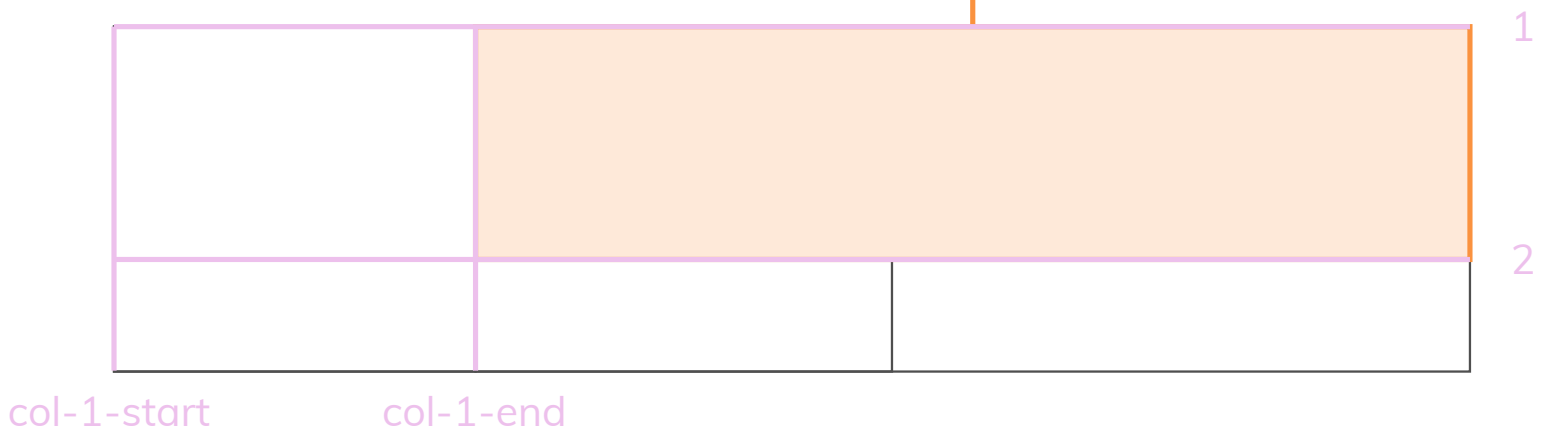


From a Grid Cell Perspective



From a Grid Cell Perspective

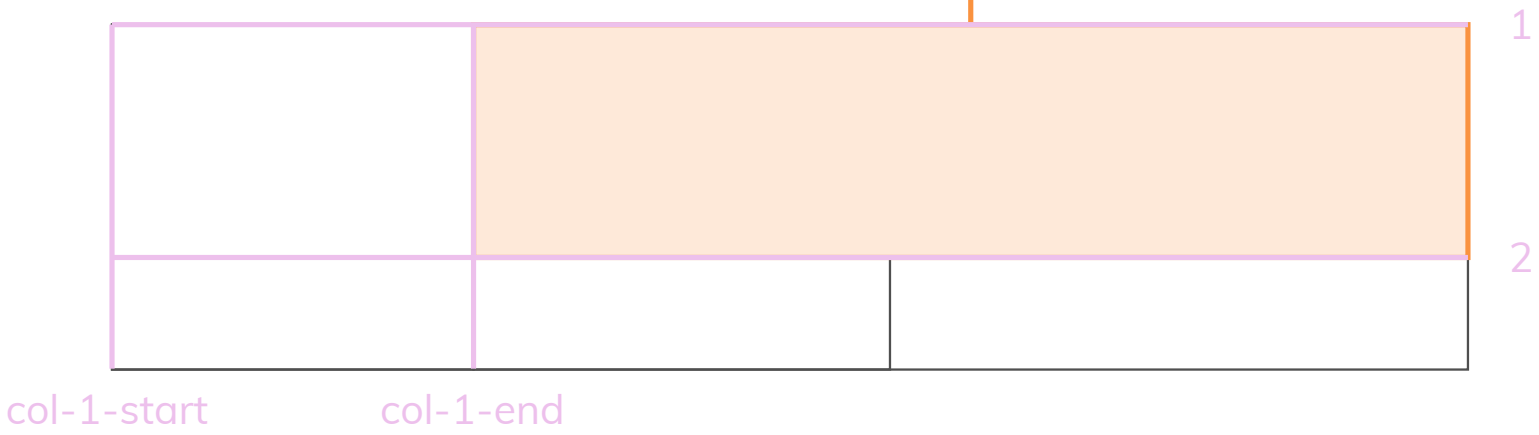
```css
.cell-2 {
  grid-column-start: col-1-end;
  grid-column-end: 4;
  grid-row-start: 1;
  grid-row-end: 2;
}
```



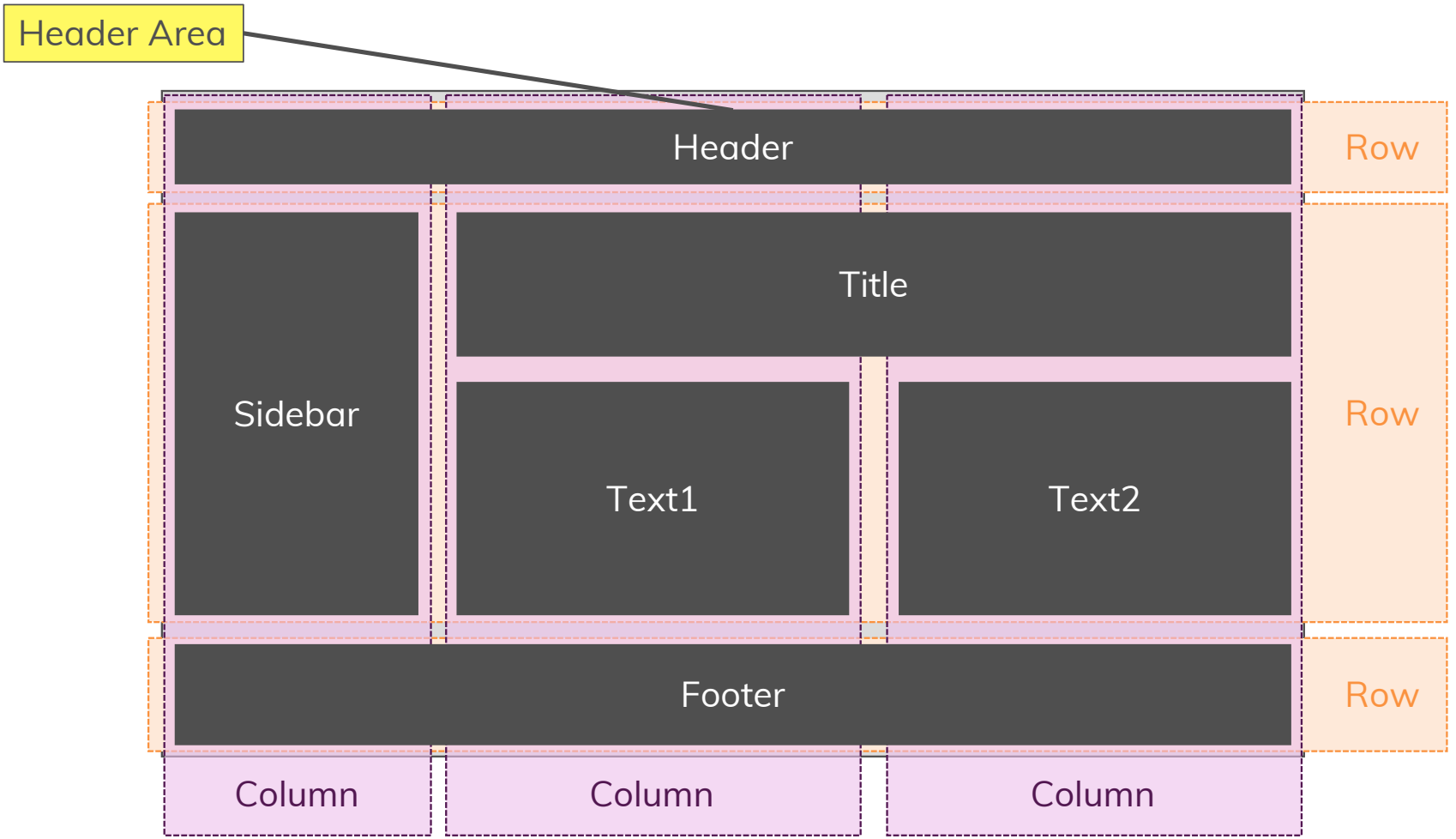
An Alternative Way

```css
.cell-2 {
  grid-column-start: col-1-end;
  grid-column-end: span 2;
  grid-row-start: 1;
  grid-row-end: 2;
}
```

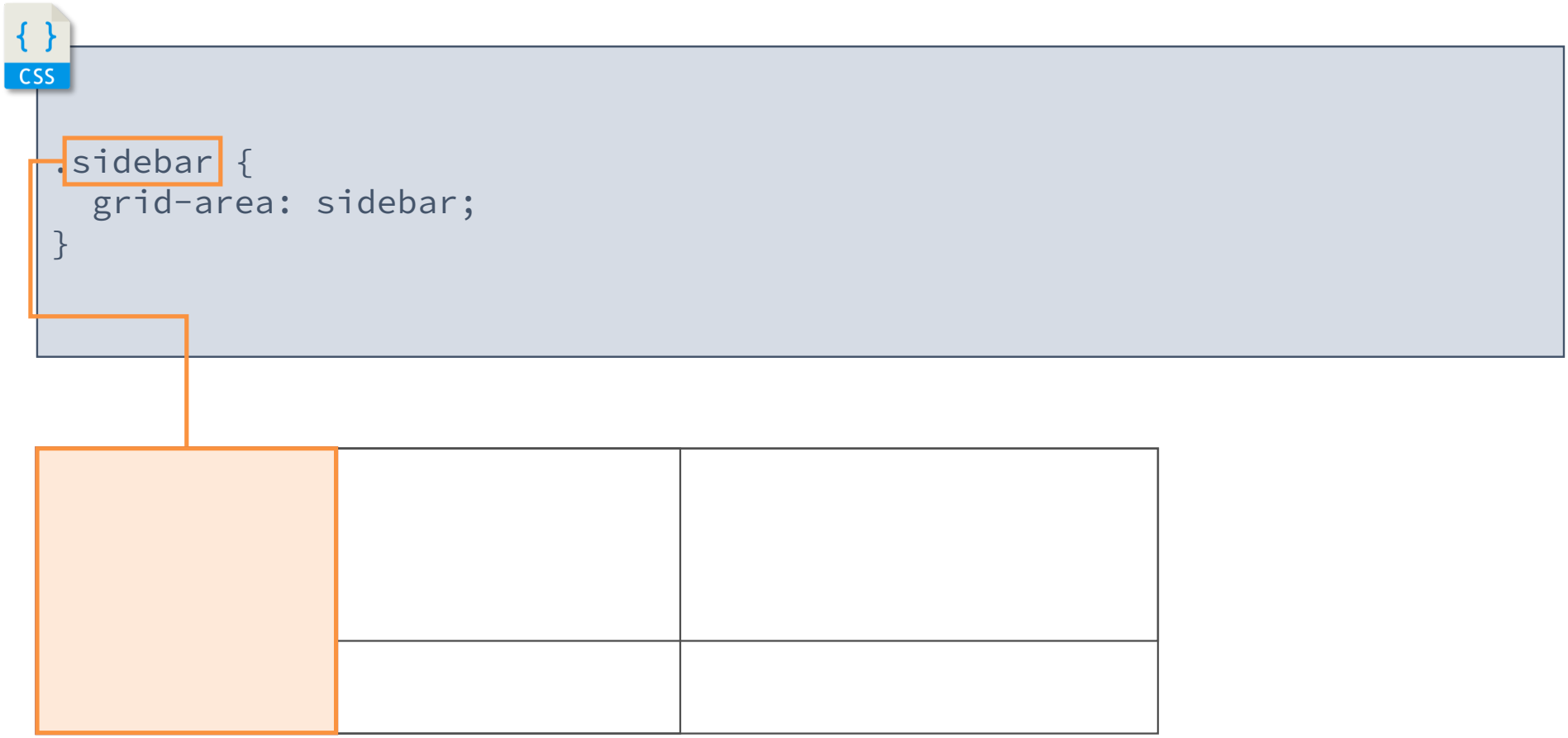
By the Way: Overlapping is allowed, control stacking via `z-index`



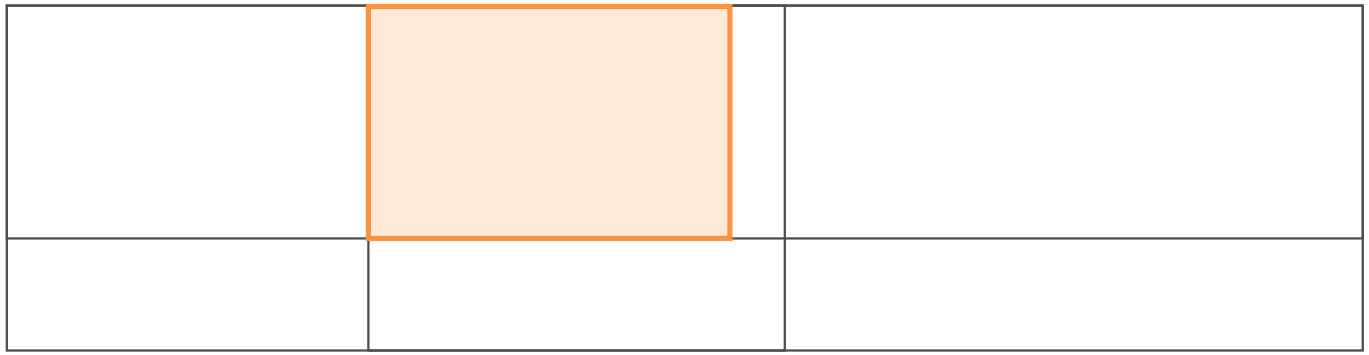
Grid Areas


Header Area
Header
Row
Sidebar
Title
Text1
Text2
Row
Footer
Row
Column
Column
Column

From a Grid Cell Perspective

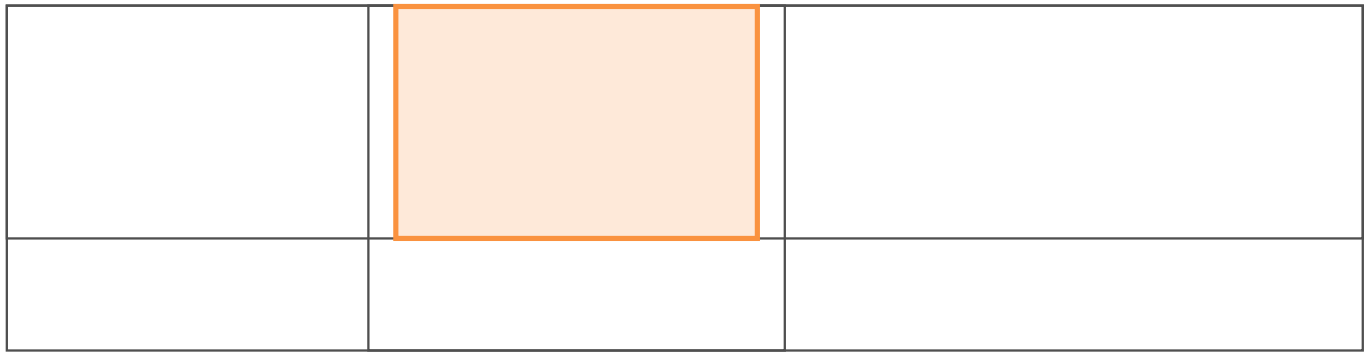


Grid Alignment – Horizontal Start



```css
.grid-container {
  justify-items: start;
}
```

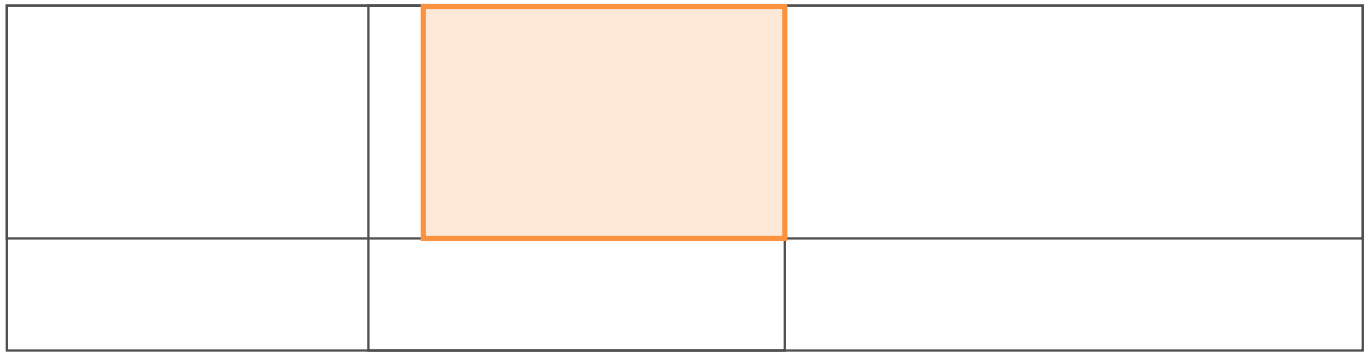
Grid Alignment - Horizontal Center



CSS

```
.grid-container {
  justify-items: center;
}
```

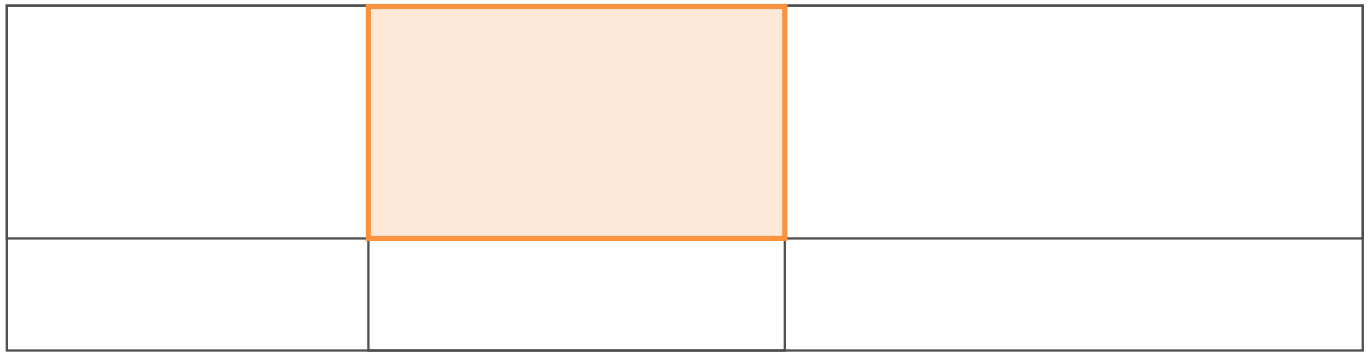
Grid Alignment - Horizontal End



CSS

```
.grid-container {
  justify-items: end;
}
```

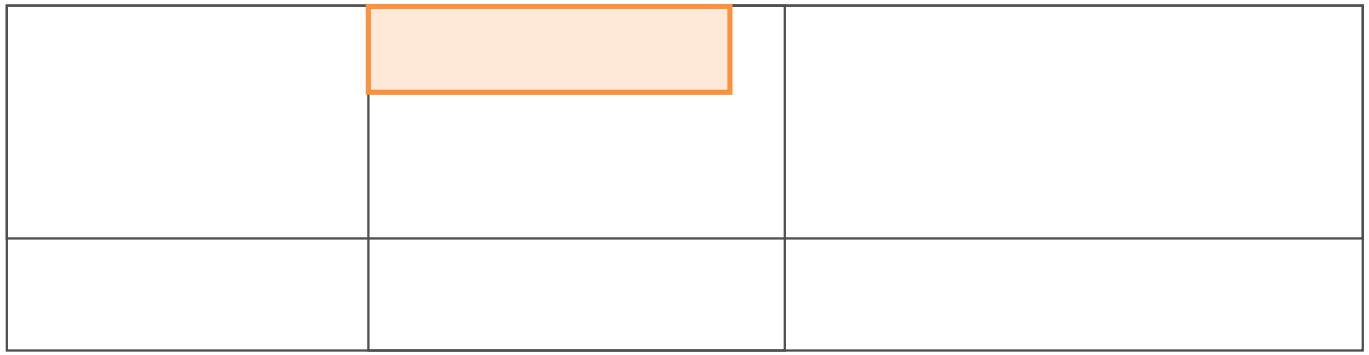
Grid Alignment - Horizontal Stretch



CSS

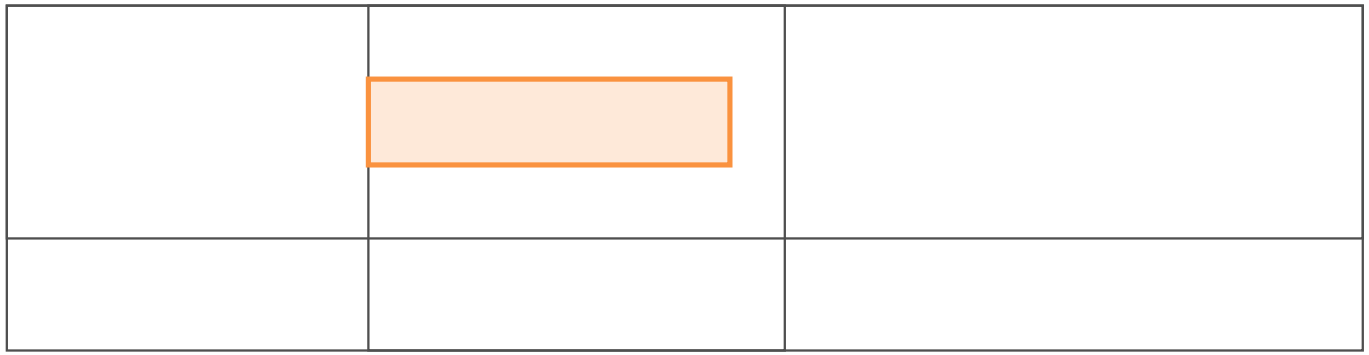
```
.grid-container {
  justify-items: stretch;
}
```

Grid Alignment – Vertical Start



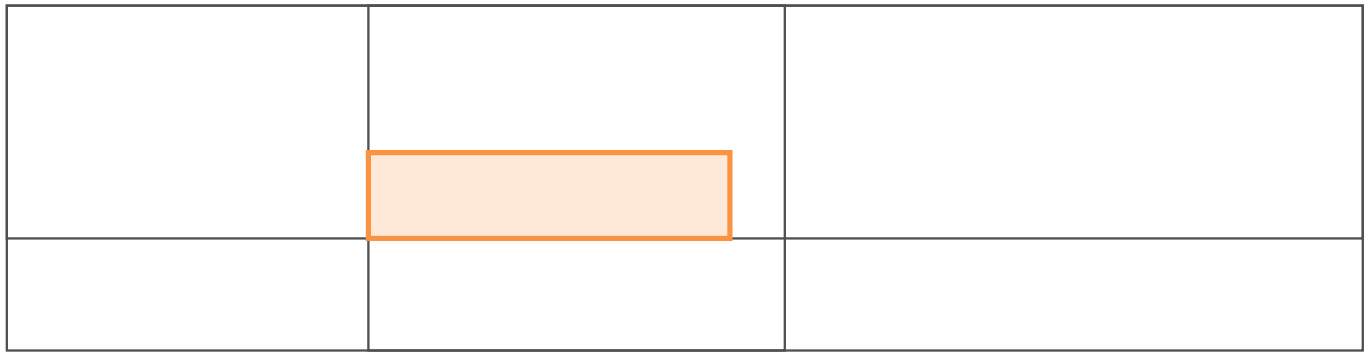
```css
.grid-container {
  align-items: start;
}
```

Grid Alignment - Vertical Center



```css
.grid-container {
  align-items: center;
}
```

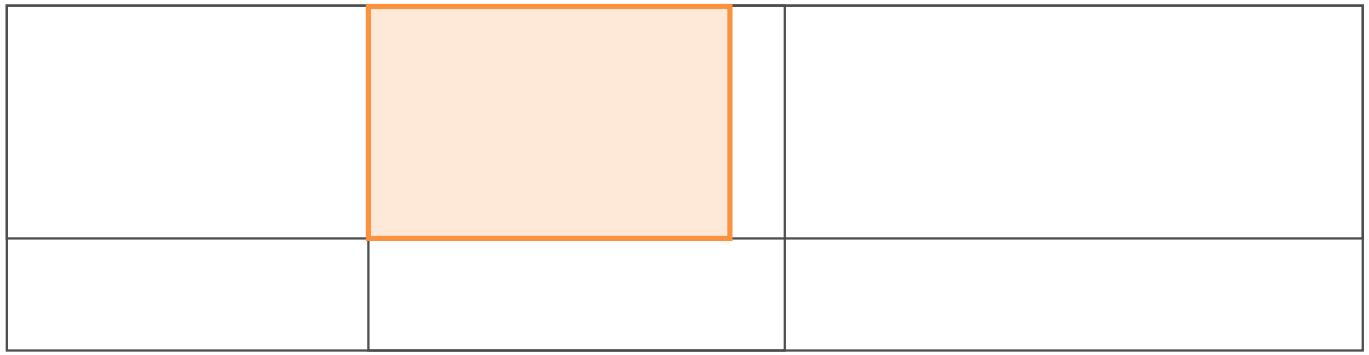
Grid Alignment - Vertical End



CSS

```
.grid-container {
  align-items: end;
}
```

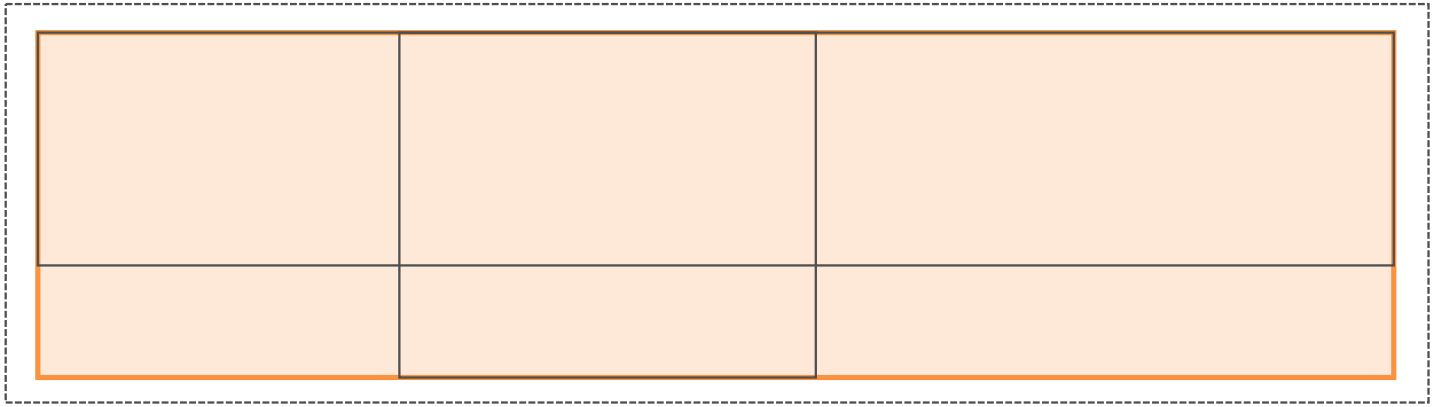
Grid Alignment - Vertical Stretch



CSS

```
.grid-container {
  align-items: stretch;
}
```

Grid Alignment – Align Grid Itself

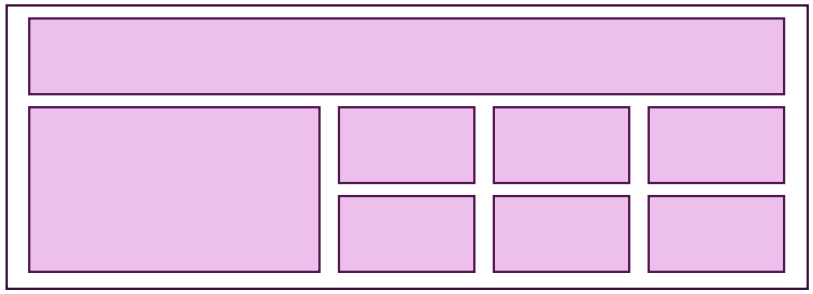


```css
.grid-container {
  justify-content: start | end | center | stretch | space-around | space-between | space-evenly;
  align-content: start | end | center | stretch | space-around | space-between | space-evenly;
}
```

CSS Grid vs Flexbox

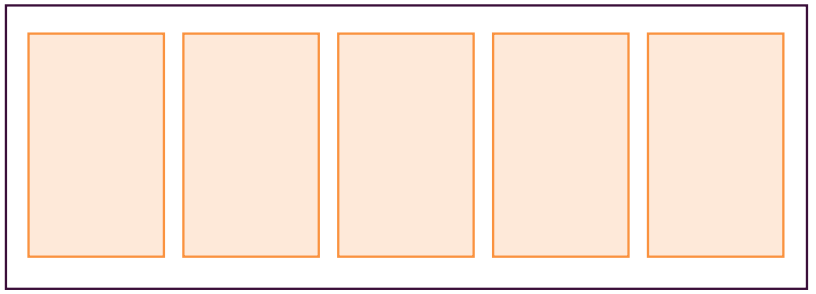
CSS Grid

Two-dimensional Positioning



CSS Flexbox

One-dimensional Positioning



CSS Variables

CSS

```css
.element-1 {
  color: #fa923f;
}

.element-2 {
  color: #fa923f;
}

.element-3 {
  color: #fa923f;
}
```

CSS

```css
:root {
  --my-color: #fa923f;
}

.element-1 {
  color: var(--my-color);
}

.element-2 {
  color: var(--my-color);
}

.element-3 {
  color: var(--my-color, #fa923f);
}
```

Vendor Prefixes

Browsers implement new Features Differently and at different Speed

CSS

```
.container {
  display: -webkit-box;
  display: -ms-flexbox;
  display: -webkit-flex;
  display: flex;
}
```

Support Queries

Some Features just aren‘t implemented (yet) in some Browsers

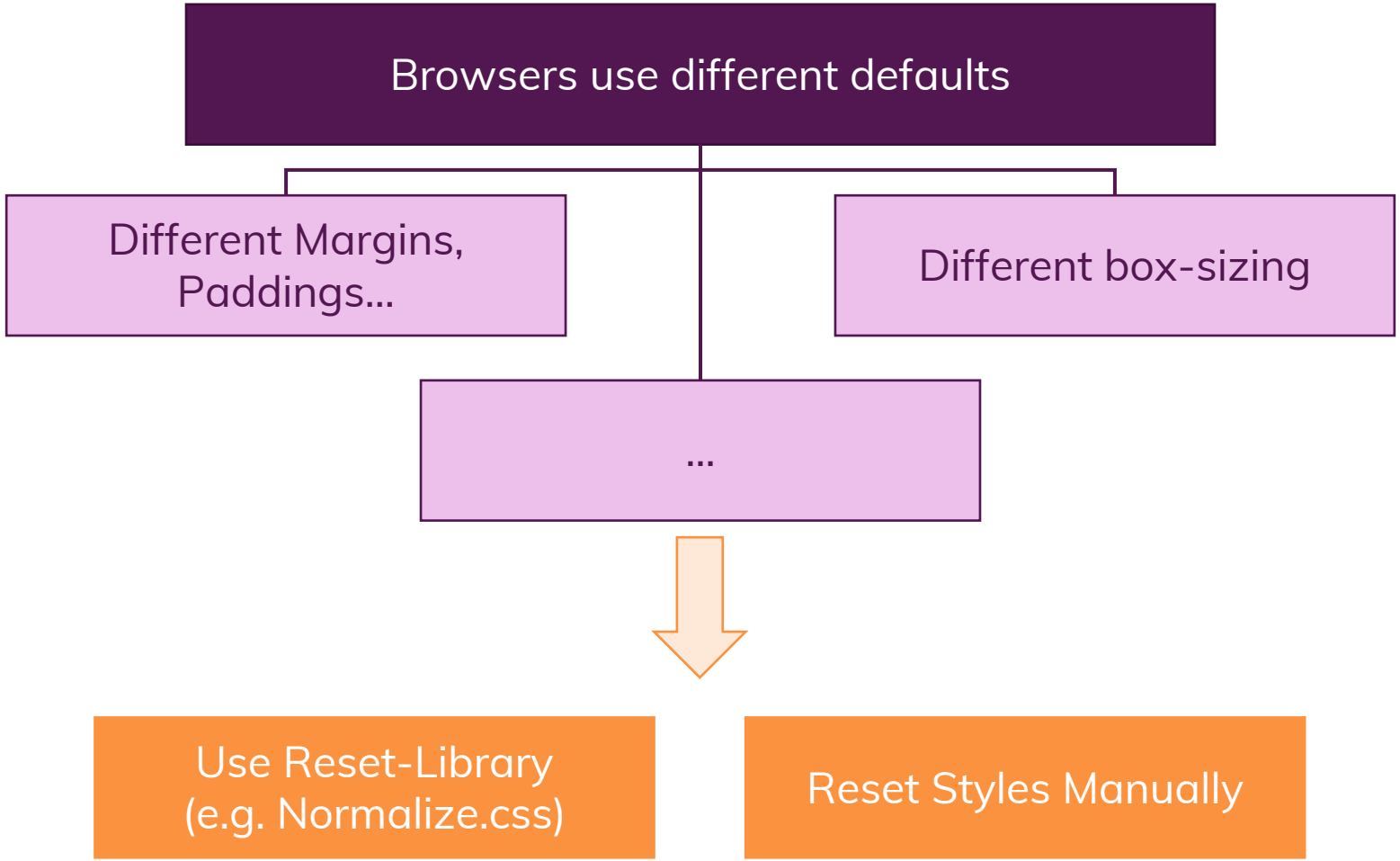

```css
@supports (display: grid) {
  .container {
    display: grid;
  }
}
```

Polyfills

A Polyfill is a JavaScript Package which enables certain CSS Features in Browsers which would not support it otherwise.

Remember: Polyfills come at a cost! The JavaScript has to be loaded and parsed!

Eliminate Cross-Browser Inconsistencies



Choosing Class Names Correctly

Do	Don‘t
Use kebab-case	Use snakeCase
Because CSS is case-insensitive	Because CSS is case-insensitive
Name by feature	Name by style
For example `.page-title`	`.title-blue`

Block Element Modifier (BEM)

A uniform and consistent way of naming your CSS classes

	.	BLOCK	__	ELEMENT	--	MODIFIER
Example	.	menu-main	__	item	--	size-big
Example	.	button	__		--	success

“Vanilla CSS” vs CSS Frameworks

Vanilla CSS

Write all your styles and layouts on your own

Component Frameworks

Foundation
Start here, build everywhere.

Bootstrap 4

Choose from a rich suite of pre-styled components & utility features/ classes

Utility Frameworks

Tailwind CSS

Build your own styles and layouts with the help of utility features and classes

“Vanilla CSS” vs CSS Frameworks

Vanilla CSS	Component Frameworks	Utility Frameworks
Full Control	Rapid Development	Faster Development
No unnecessary Code	Follow Best Practices	Follow Best Practices
Name Classes as you like	No Need to be an Expert	No Expert Knowledge Needed
Build everything from Scratch	No or Little Control	Little Control
Danger of “bad code”	Unnecessary Overhead Code	Unnecessary Overhead Code
	“All Websites Look the Same”	

Summary

CSS Variables

- `--your-name: 1rem;`
- Define values once, use them multiple times
- Only supported in modern browsers

Naming CSS Classes

- Use kebab-case (e.g. `page-title`) and name classes by feature not by style (e.g. `title-blue`)
- Avoid class name collisions, for example by using BEM class names

Cross-Browser Support

- Browser implement new features differently and with different speed
- Use vendor-prefixes to use cutting-edge features AND support older browsers (partly)
- `@supports` allows you to check for feature-support before using a property
- Polyfills can enable some CSS features which wouldn't work otherwise
- Consider normalizing CSS defaults across browsers

Vanilla CSS vs Frameworks

- Writing all styles from scratch gives you full control but comes with more work and responsibility
- Component frameworks (e.g. Bootstrap 4) allow you to build web pages rapidly but with less control
- Utility frameworks can be a good compromise