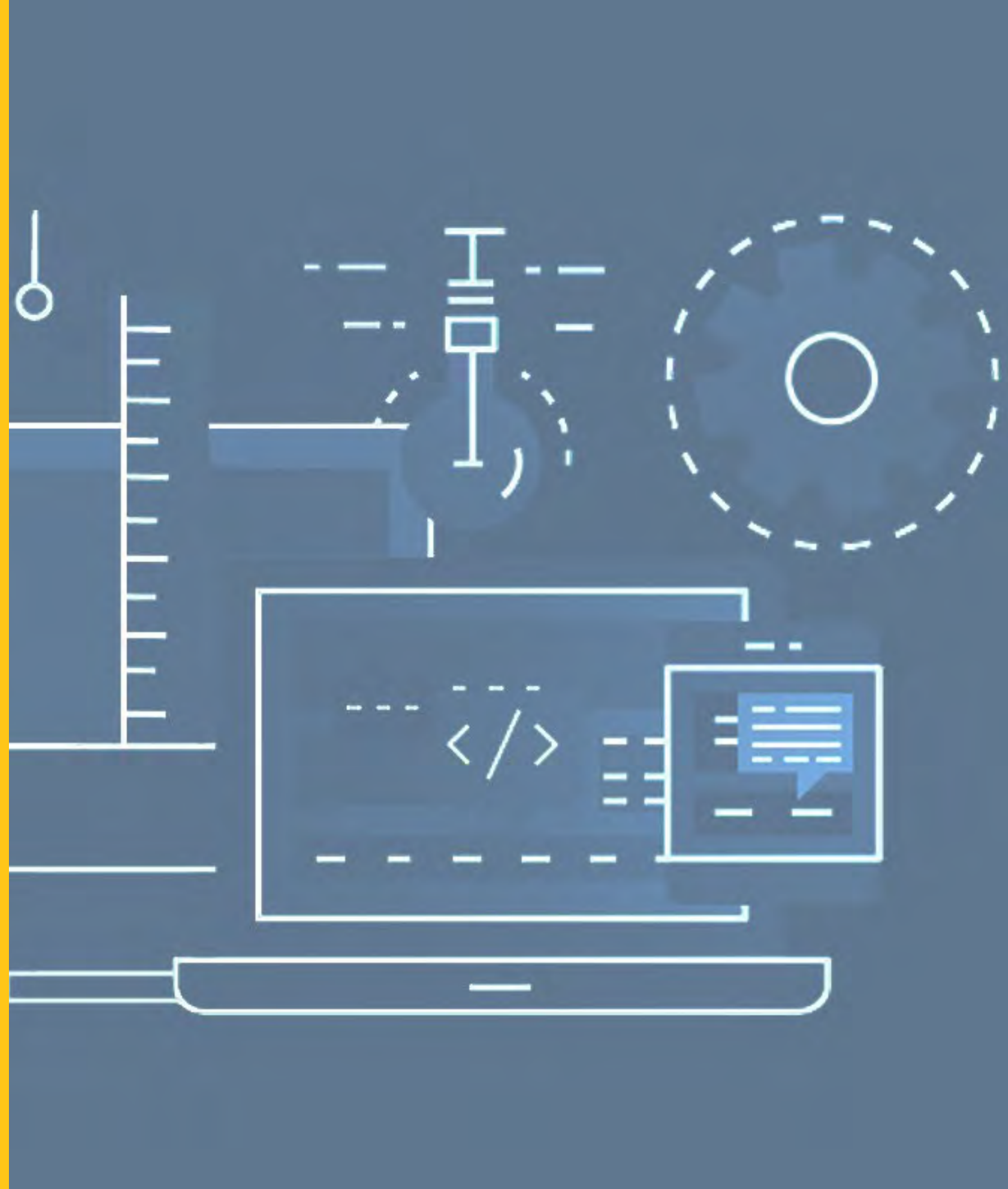
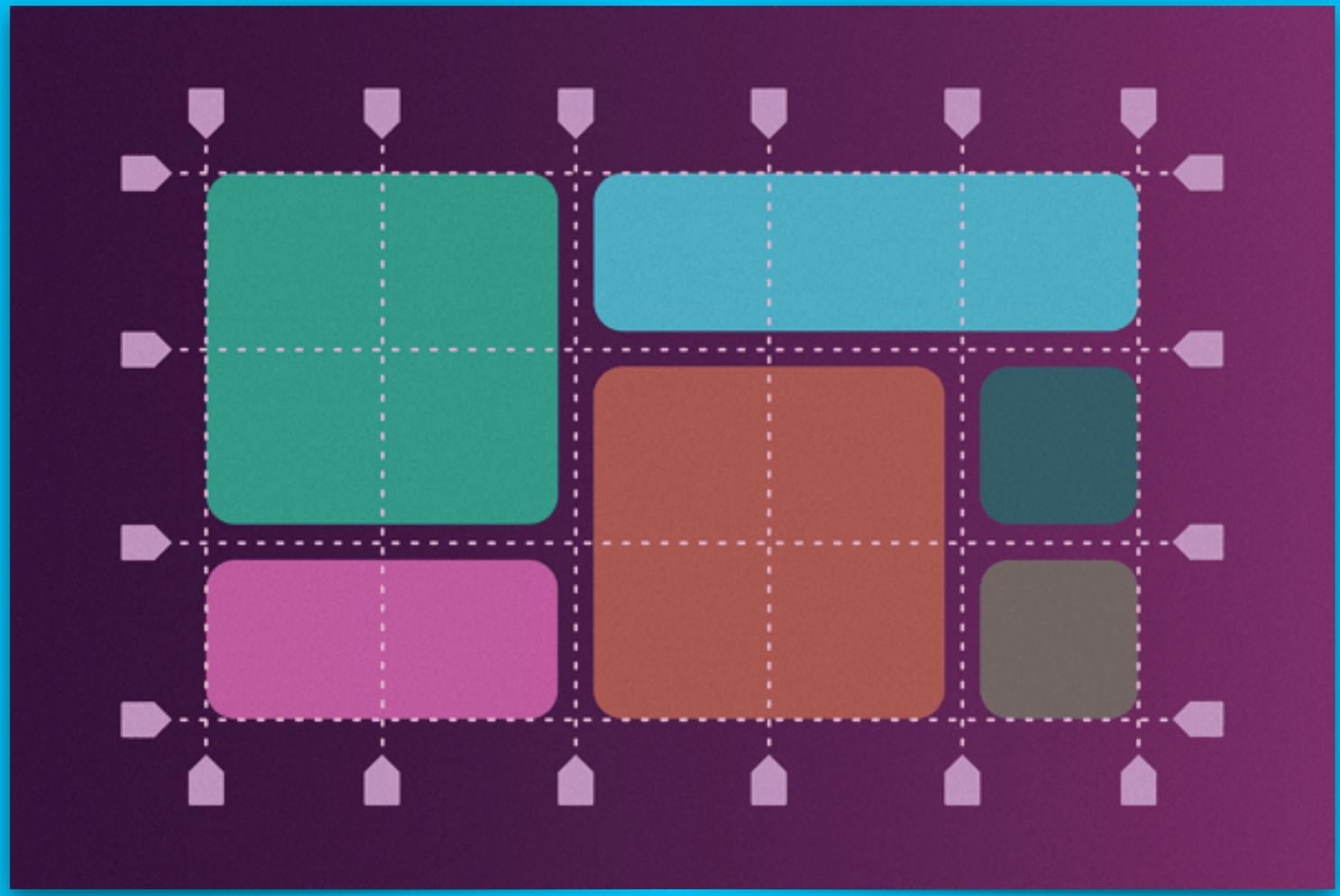
SHELLY GRAHAM, 05/12/2022

WEB DEV 3 SPRING 2022

Week 6: CSS Grid



WEEK 6: CSS GRID

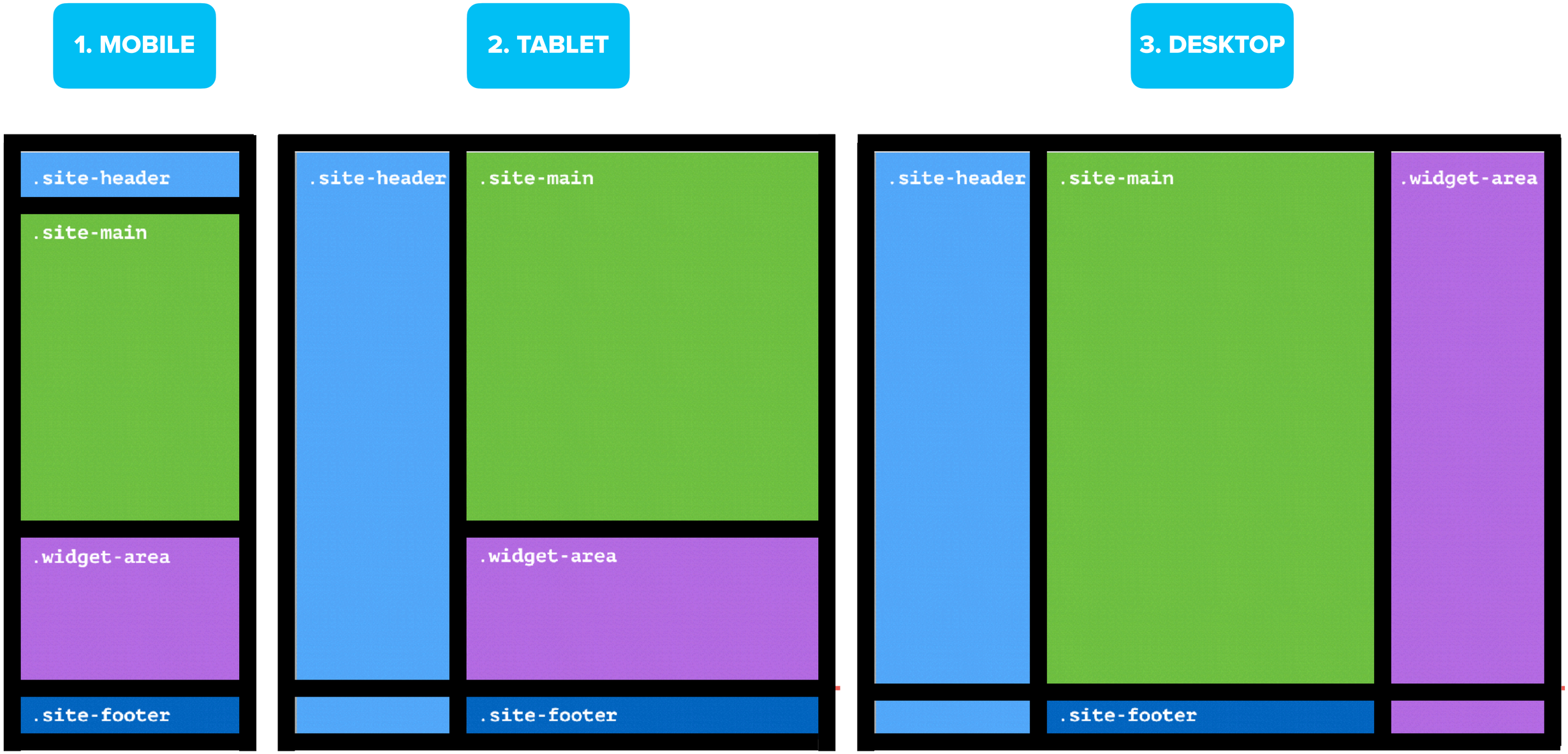


RECAP: ROW OR COLUMN - YOU CAN'T HAVE BOTH

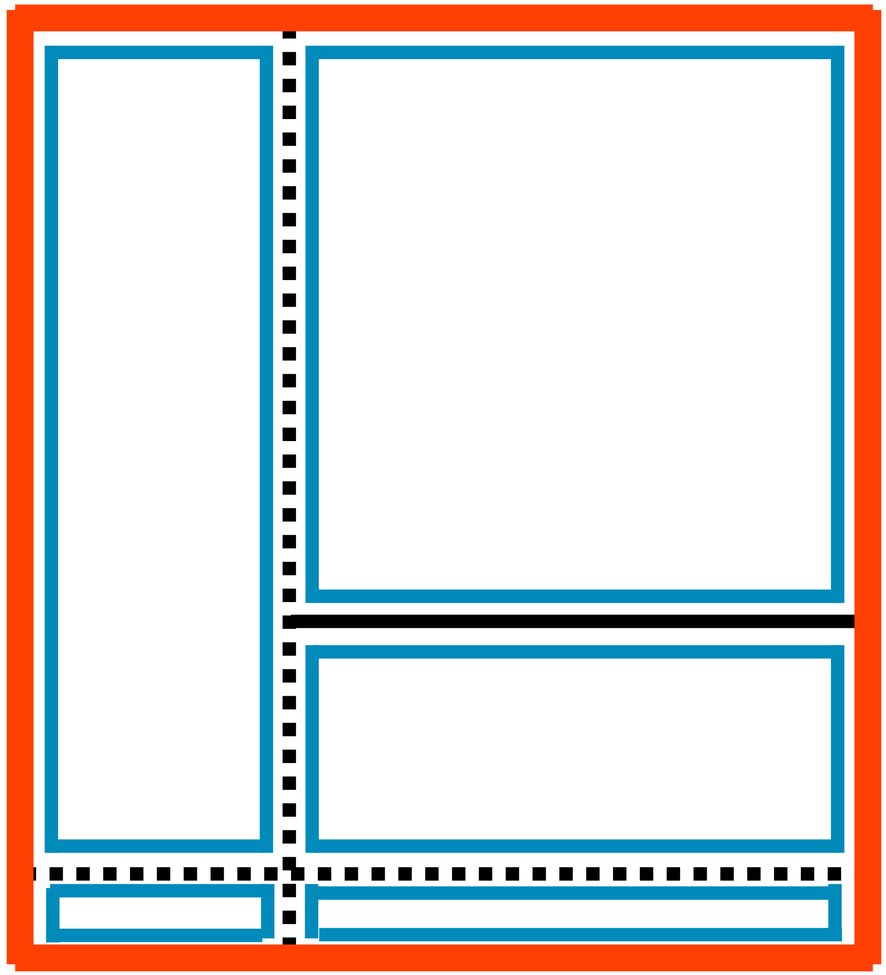
- Flexbox lets you layout either in row OR column form.
- Therefore you create HTML elements aka Flex Containers, simply to flex them in a certain direction - not efficient!
- You can't define a specific row and column amount but are rather forced to make the content fit in either row or column formats

WHAT IS A GRID?

- A network of lines that cross each other to form a series of squares or rectangles
- No, but really?!


1. MOBILE
2. TABLET
3. DESKTOP
.site-header
.site-main
.widget-area
.site-footer
.site-header
.site-main
.widget-area
.site-footer
.site-header
.site-main
.widget-area
.site-footer

IT ALL STARTS WITH...

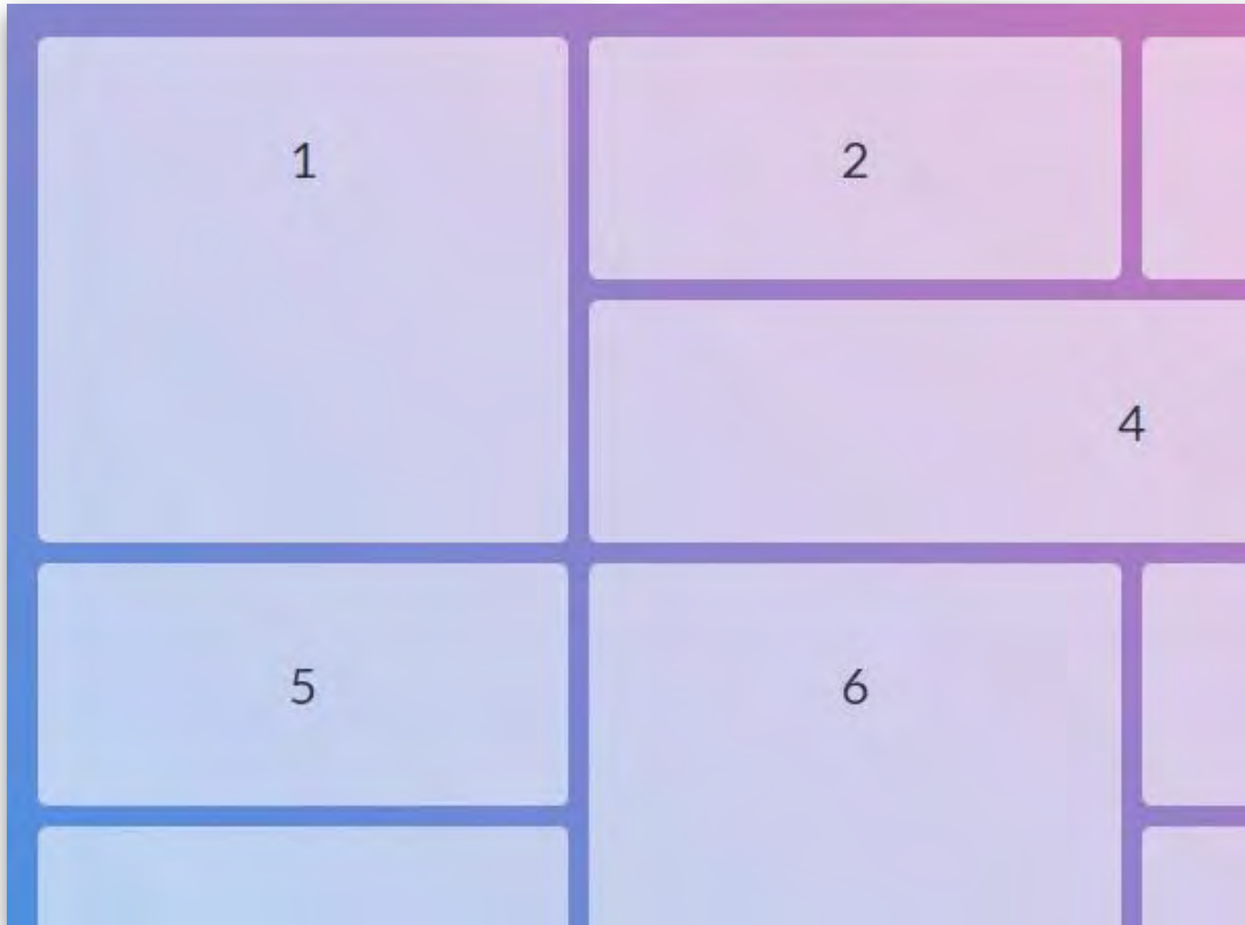


Grid Container

Grid Items

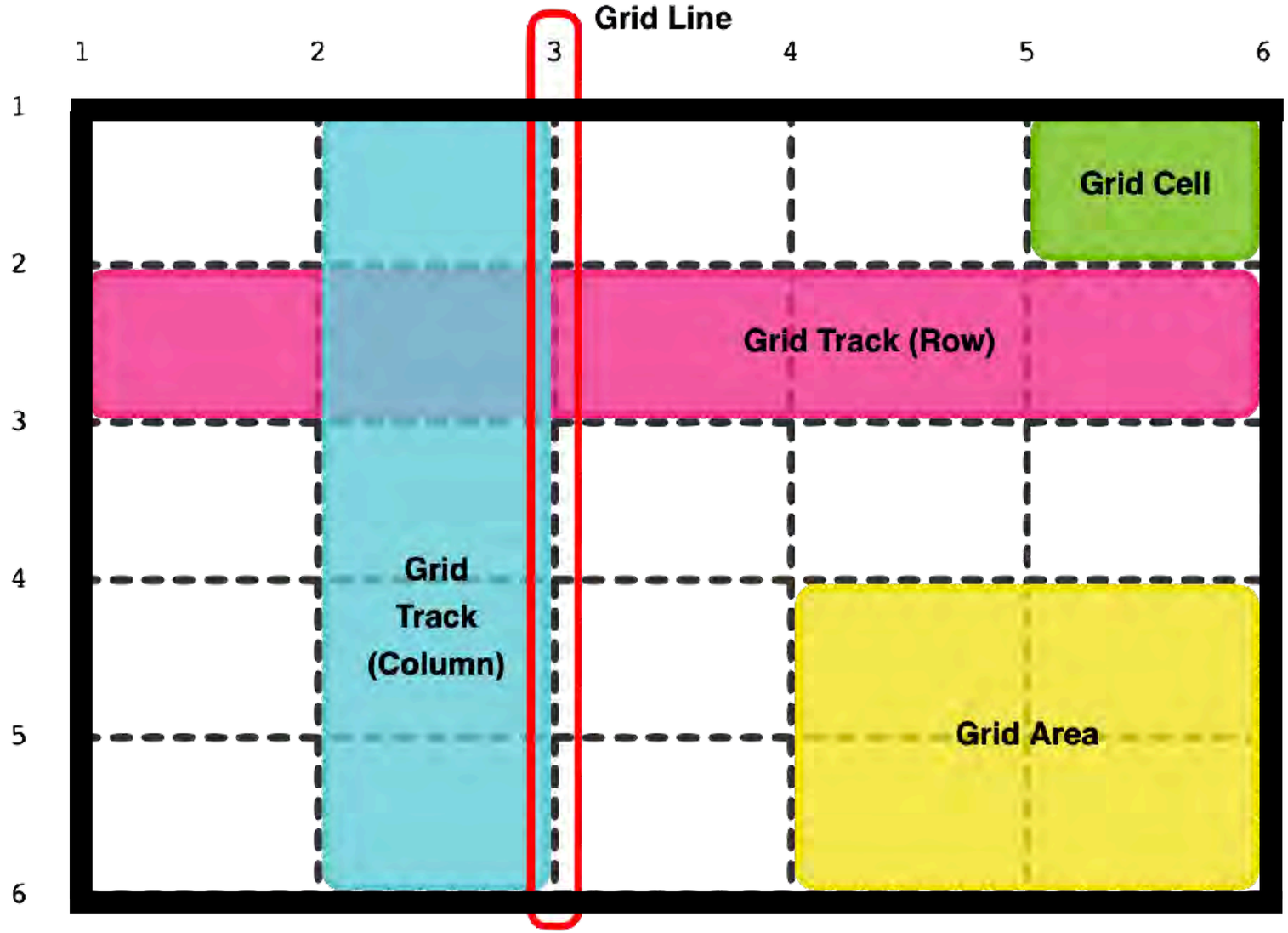
STRUCTURE OF CSS GRID

- Consists of rows and columns
- Rows and columns are defined by lines
- Each block is a grid cell, like in Excel
- You can merge cells, add cells, add rows, columns - also just like in Excel!
- Grid items can also be grid containers



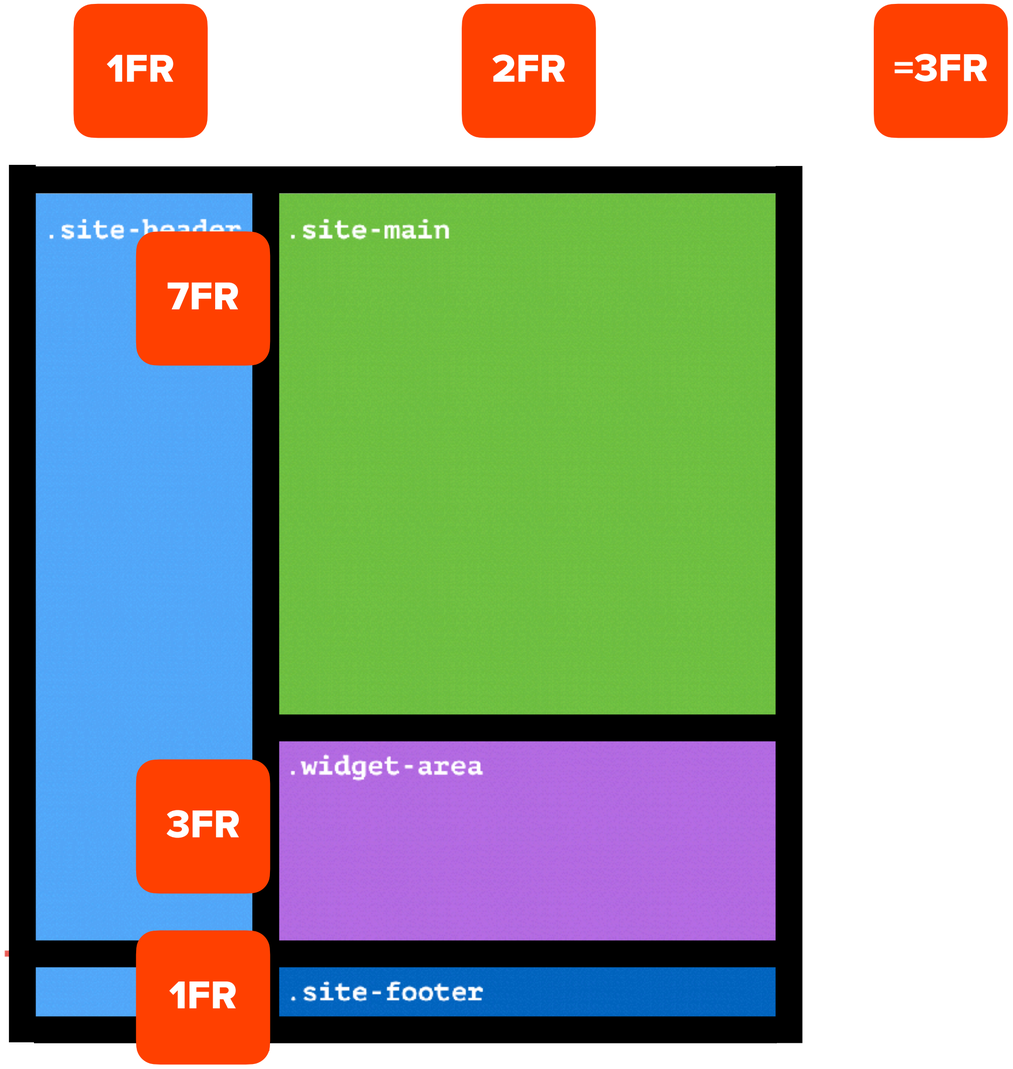
STRUCTURE OF CSS GRID

- Grid Cell: One block of content
- Grid Line: Divides grid into individual grid cells
  - Explicit grid line: manually set structure of grid
  - Implicit grid line: lines to accommodate content that has not been explicitly defined
- Track: One entire row or column
- Area: Square or rectangle of multiple cells



SPECIAL UNIT: FR

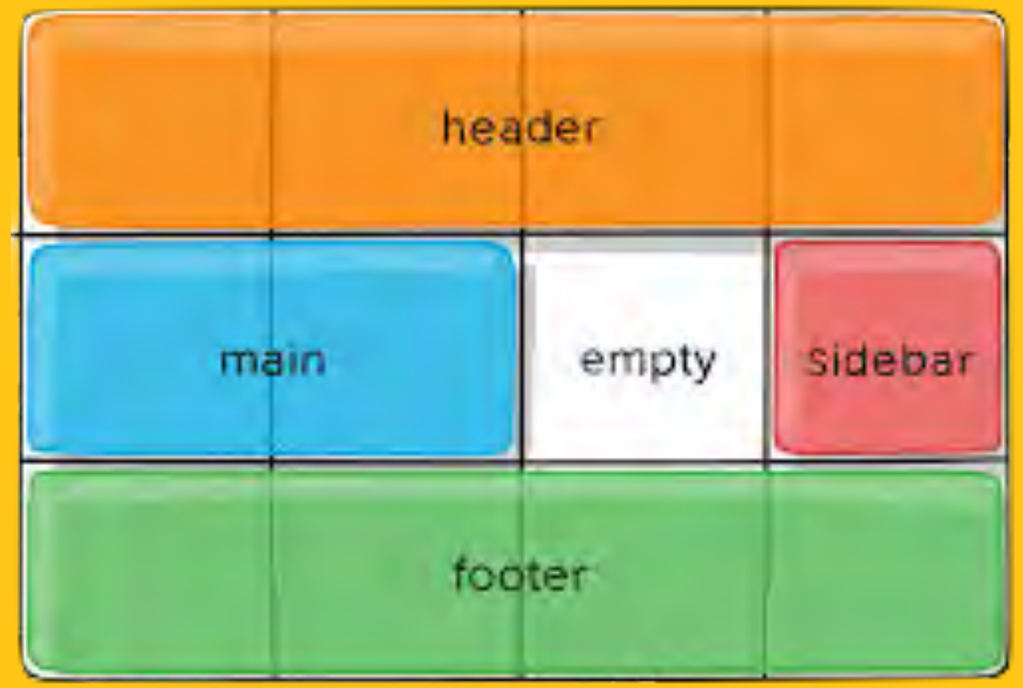
- fr = fraction aka free space
- Uses the remaining space of the grid
- Often best unit to use, even over percentages or vw/vh



CSS GRID IN A NUTSHELL:

1. DEFINE GRID
2. PLACE ITEMS IN GRID
3. WORLD PEACE

GRID BASICS



THE PARENT - TEMPLATE

DISPLAY: GRID

- Defines element as grid container
- Values:
  - grid: generates a block-level grid
  - inline-grid: generates an inline-level grid

```
.grid-container {
    display: grid
             inline-grid;
}
```

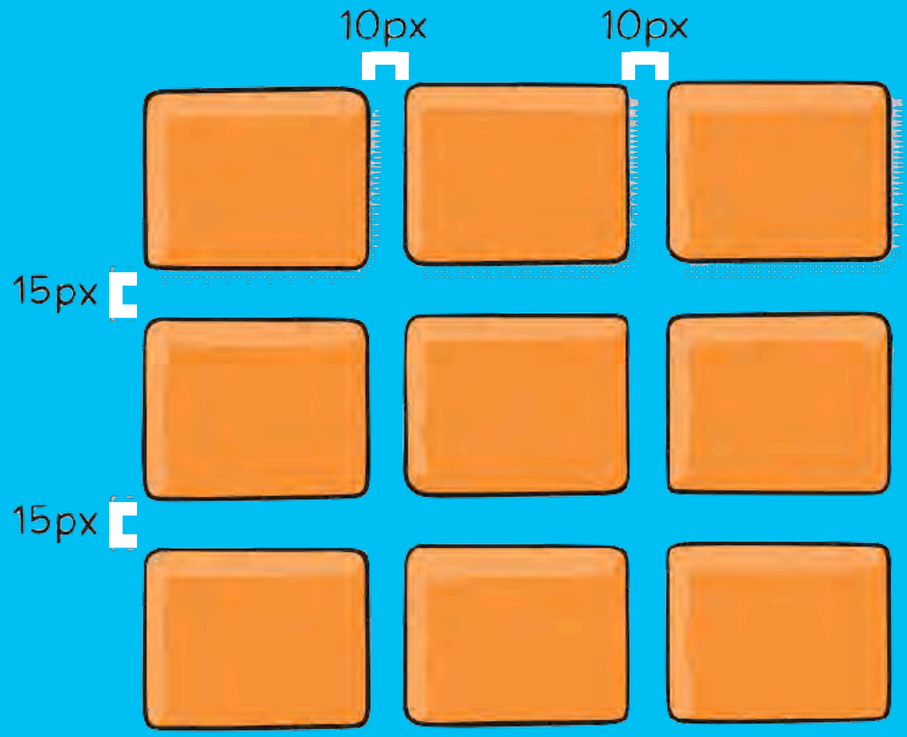
THE PARENT - TEMPLATE

GAPS

- row-gap
- column-gap
- grid-row-gap
- grid-column-gap

- **SHORTHAND:**
  - gap: grid-row-gap grid-column-gap
- Value:
  - Any unit (px, %, vw, rems...)

```
.grid-container {
    display: grid;
    grid-template-columns: 100px 50px 100px;
    grid-template-rows: 80px auto 80px;
    column-gap: 10px;
    row-gap: 15px;

    ////// OR //////

    gap: 10px 15px;
}
```



THE PARENT - TEMPLATE

GRID-TEMPLATE-COLUMNS
GRID-TEMPLATE-ROWS

- Define # and width of rows:
  - grid-template-rows: [value]
- Define # and width of columns:
  - grid-template-columns: [value]

- Value can be:
  - Any unit (px, %, vw, rems...)
  - Any name you choose

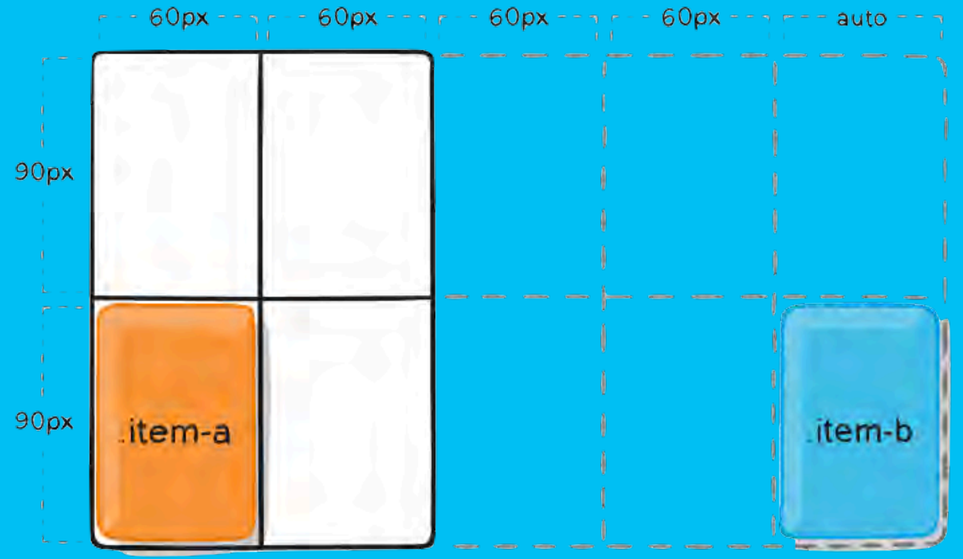
```
.grid-container {
    display: grid;
    grid-template-columns: 40px 50px auto 50px 40px;
    grid-template-rows: 25% 100px auto;
  }
```

THE PARENT - TEMPLATE

GRID-AUTO-COLUMNS
GRID-AUTO-ROWS

- Specifies the size of any auto-generated grid tracks = *implicit tracks*
- Implicit tracks get created when there are more grid items than cells in the grid or when a grid item is placed outside of the explicit grid

```
.grid-container {
    display: grid;
    grid-auto-columns: 60px;
    grid-auto-rows: 200px;
}
```



LETS CODE!

THE CHILDREN

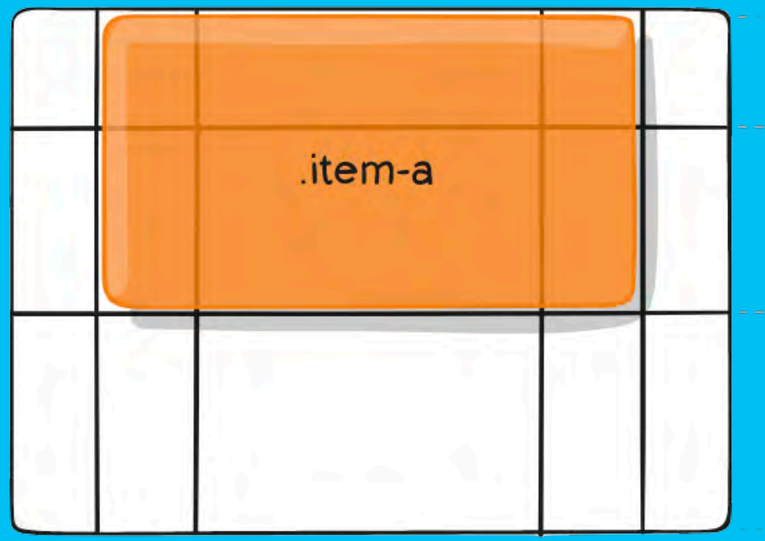
DEFINE ROWS AND COLUMNS FOR CHILDREN

- Determines a grid item’s location within the grid

- grid-row-start
- grid-row-end
- grid-column-start
- grid-column-end

- If no "grid-row/column end” is declared, the item will span 1 track by default

```
.grid-container {
    display: grid;
    grid-template-columns: 10% 10% 60% 10% 10%;

    .grid-item-one {
        grid-column-start: 2;
        grid-column-end: 5;
        grid-row-start: 1;
        grid-row-end: 3;
    }
}
```



THE CHILDREN

DEFINE ROWS AND COLUMNS FOR CHILDREN

- SHORTCUTS:
  - grid-row
  - grid-column
  - grid-area
    - Order: grid-row-start/ grid-column-start/ grid-row-end/ grid-column-end
    - OR: Simply give it a name!

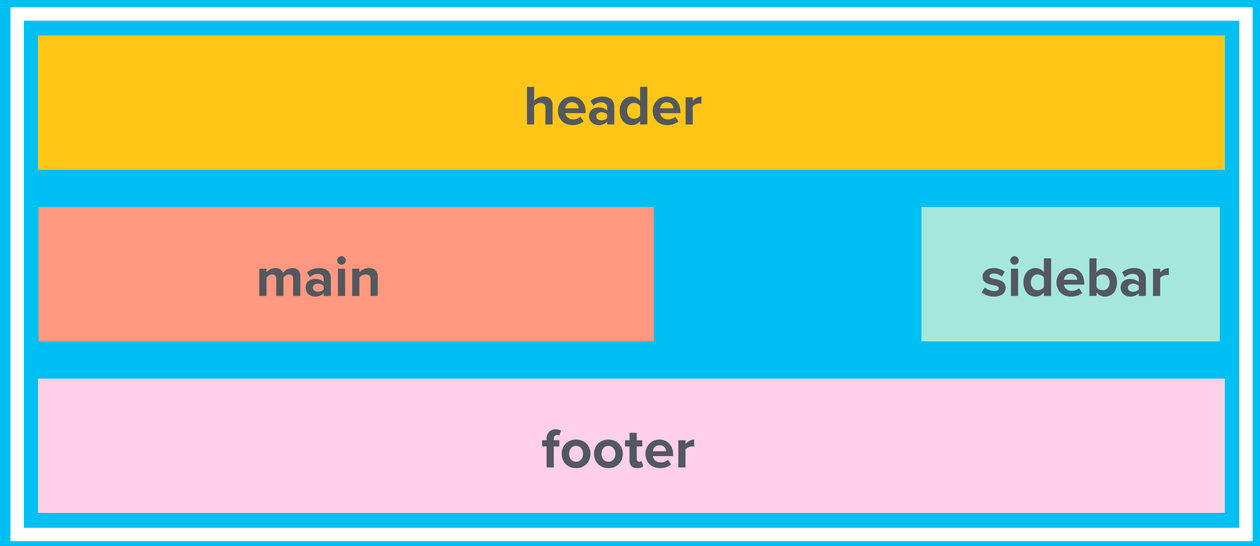
```
.grid-container {
    display: grid;
    grid-template-columns: 10% 10% 60% 10% 10%;

    .grid-item-one {
        grid-column-start: 2;
        grid-column-end: 5;
        grid-row-start: 1;
        grid-row-end: 3;

        ///// OR /////

        grid-column: 2 / 5;
        grid-row: 1 / 3;

        ///// OR /////

        grid-area: 1 / 2 /3 / 5;

        ///// OR /////

        grid-area: main;
    }
}
```

THE PARENT - TEMPLATE

GRID-TEMPLATE-AREAS

- BIG ONE FOR MY VISUAL FOLKS!
- Defines a grid template by referencing the names of grid areas
- Easiest to work in lines
- Each line uses quotation marks
- If you want three rows, write grid-area 3 times, if you want four, write it out 4 times etc...

```
.grid-container {
    display: grid;
    grid-template-columns: 50px 50px 50px 50px;
    grid-template-rows: auto;
    grid-template-areas:
      "header header header header"
      "main   main   .      sidebar"
      "footer footer footer footer";
}
```



THE PARENT - TEMPLATE

GRID-TEMPLATE

- **SHORTHAND:**
  - grid-template-rows
    grid-template-columns
    grid-template-areas
  - Can’t use repeat() function as the tracks are intended to visually line up one-to-one with the rows/columns

```
.grid-container {
    display: grid;
    // grid-template-columns: 10% 10% 60% 10% 10%;
    // grid-template-rows: repeat(4, 1fr);

    grid-template:
    "header       header header header header" 1fr
    "sidebar-left main   main   main   sidebar" 1fr
    "sidebar-left main   main   main   ." 1fr
    "footer       footer footer footer footer" 1fr
    /
    10% 10% 60% 10% 10%;
}
```

- Write rows on end of each line
- Write columns after area names and “/“
- No commas at and of each line
- Make use of whitespace, it will help!

THE PARENT - TEMPLATE

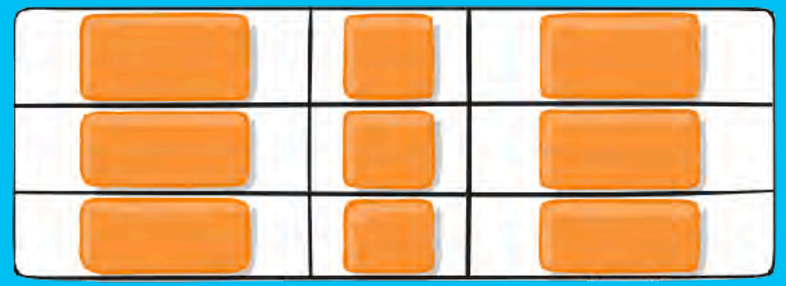
JUSTIFY-ITEMS

- Aligns grid items outside the cell along the row axis = horizontal positioning
- Values:
  - start
  - end
  - center
  - stretch (default)

```
.grid-container {
    display: grid;
    grid-template-columns: 100px 50px 100px;
    grid-template-rows: auto;
    grid-auto-rows: minmax(200px, 1fr);
    gap: 1em;

    justify-items: stretch
                   start
                   end
                   center;
}
```

stretch

center



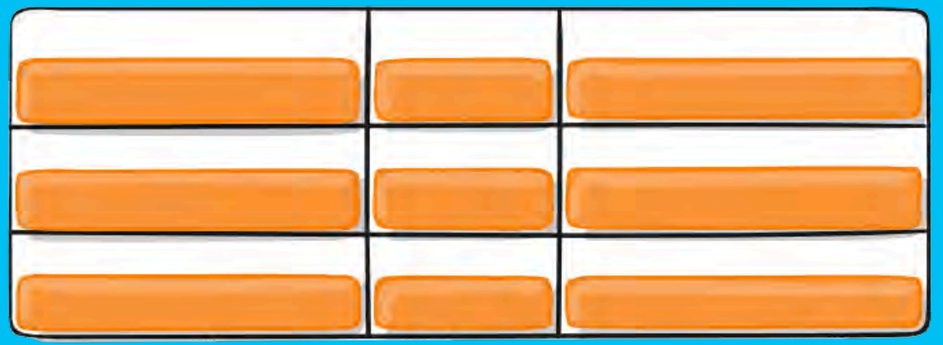
THE PARENT - TEMPLATE

ALIGN-ITEMS

- Aligns grid items outside the cell along the column axis = vertical positioning
- Values:
  - start
  - end
  - center
  - stretch (default)

```
.grid-container {
    display: grid;
    grid-template-columns: 100px 50px 100px;
    grid-template-rows: auto;
    grid-auto-rows: minmax(200px, 1fr);
    gap: 1em;

    align-items: end;
}
```

end



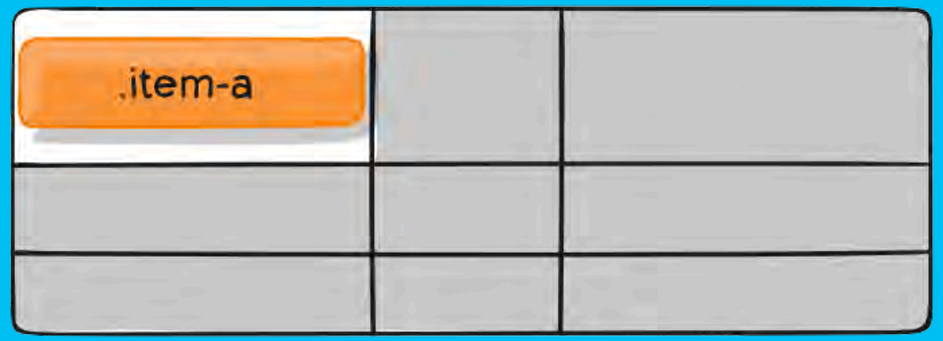
THE PARENT - TEMPLATE

PLACE-ITEMS

- **SHORTHAND:**
- justify-items & align-items
- Position grid in center:
  place-items: center center;

```
.grid-container {
    display: grid;
    grid-template-columns: 100px 50px 100px;
    grid-template-rows: auto;
    grid-auto-rows: minmax(200px, 1fr);
    gap: 1em;

    place-items: center stretch;
}
```

center stretch



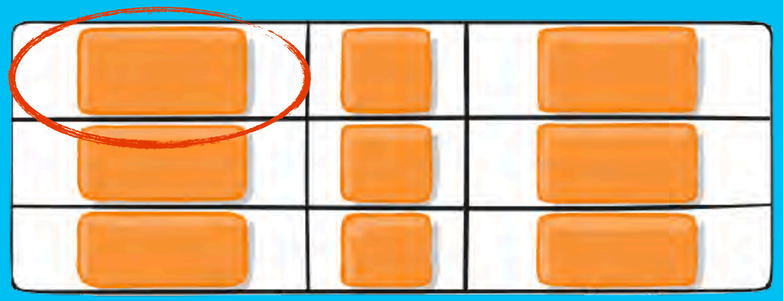
THE CHILDREN

JUSTIFY-SELF

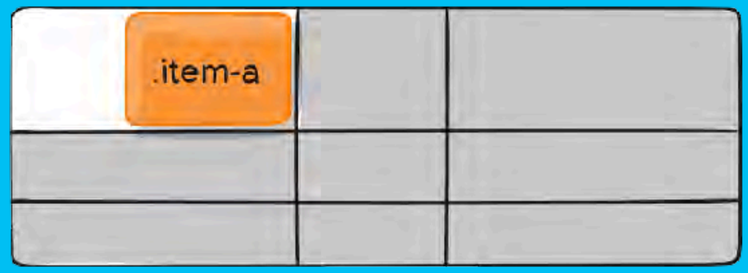
- Aligns grid item inside the cell along the row axis = horizontal
- Values:
  - start
  - end
  - center
  - stretch (default)

```
.grid-container {
    display: grid;
    grid-template-columns: 100px 50px 100px;
    grid-template-rows: auto;
    grid-auto-rows: minmax(200px, 1fr);
    gap: 1em;

    justify-items: center;

    .grid-item-one {
        justify-self: end;
    }
}
```

Grid Container:



Grid Item:



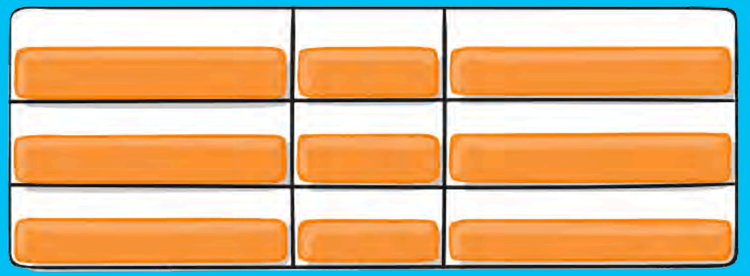
THE CHILDREN

ALIGN-SELF

- Aligns grid item inside the cell along the column axis = vertical
- Values:
  - start
  - end
  - center
  - stretch (default)

```
.grid-container {
    display: grid;
    grid-template-columns: 100px 50px 100px;
    grid-template-rows: auto;
    grid-auto-rows: minmax(200px, 1fr);
    gap: 1em;

    align-items: end;

    .grid-item-one {
        align-self: center;
    }
}
```

Grid Container:



Grid Item:

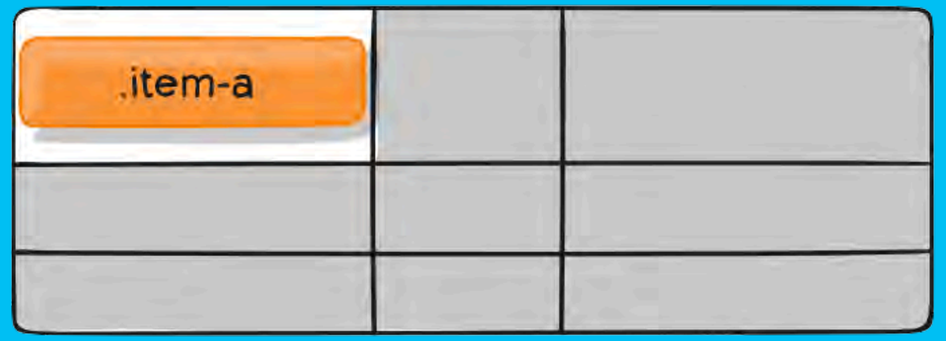
THE CHILDREN

PLACE-SELF

- SHORTHAND:
- align-self & justify-self
- Values:
  - align-self
  - justify-self
  - auto
- Position cell in center:
  place-self: center center;

```
.grid-container {
    display: grid;
    grid-template-columns: 100px 50px 100px;
    grid-template-rows: auto;
    grid-auto-rows: minmax(200px, 1fr);
    gap: 1em;

    align-items: end;

    .grid-item-one {
        place-self: center stretch;
    }
}
```

center stretch

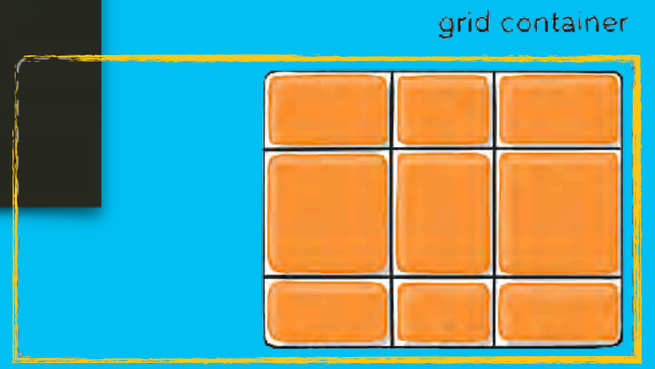


THE PARENT - TEMPLATE

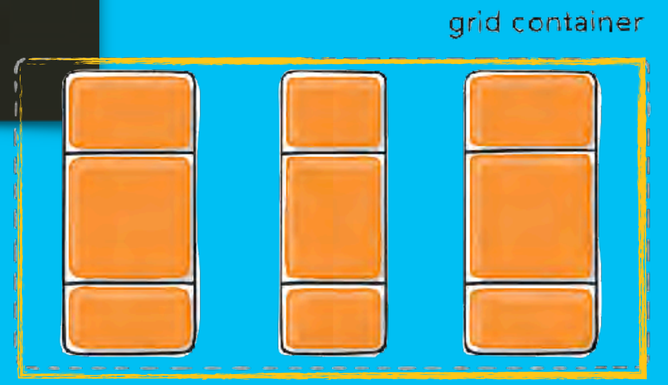
JUSTIFY-CONTENT

- Aligns grid within grid container along row axis = horizontal positioning
- Values:
  - start
  - end
  - center
  - stretch (default)
  - space-around
  - space-between
  - space-evenly

```css
.grid-container {
    display: grid;
    grid-template-columns: 100px 50px 100px;
    grid-template-rows: auto;
    grid-auto-rows: minmax(200px, 1fr);
    gap: 1em;

    justify-content: end;
}
```




```css
.grid-container {
    display: grid;
    grid-template-columns: 100px 50px 100px;
    grid-template-rows: auto;
    grid-auto-rows: minmax(200px, 1fr);
    gap: 1em;

    justify-content: space-around;
}
```

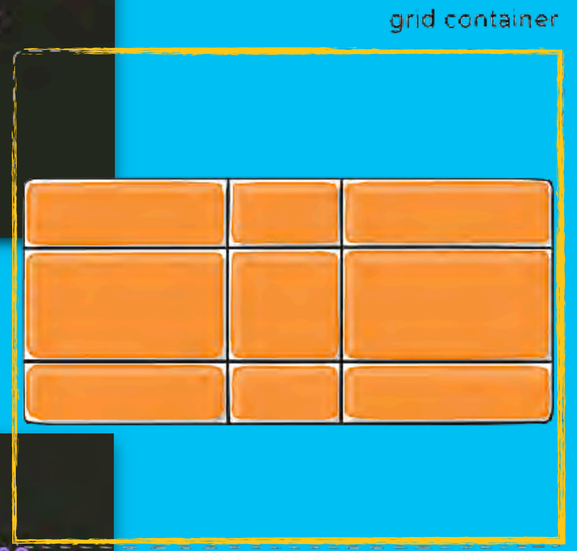


THE PARENT - TEMPLATE

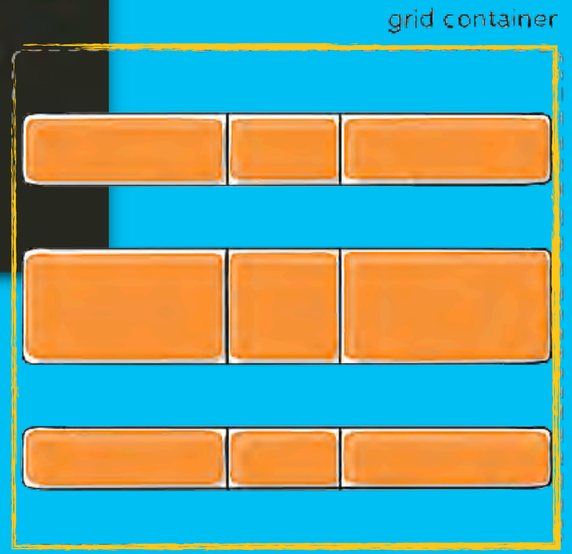
ALIGN-CONTENT

- Aligns grid within grid container along column axis = vertical positioning
- Values:
  - start
  - end
  - center
  - stretch (default)
  - space-around
  - space-between
  - space-evenly

```css
.grid-container {
    display: grid;
    grid-template-columns: 100px 50px 100px;
    grid-template-rows: auto;
    grid-auto-rows: minmax(200px, 1fr);
    gap: 1em;

    align-content: center;
}
```




```css
.grid-container {
    display: grid;
    grid-template-columns: 100px 50px 100px;
    grid-template-rows: auto;
    grid-auto-rows: minmax(200px, 1fr);
    gap: 1em;

    align-content: space-evenly;
}
```



THE PARENT - TEMPLATE

PLACE-CONTENT

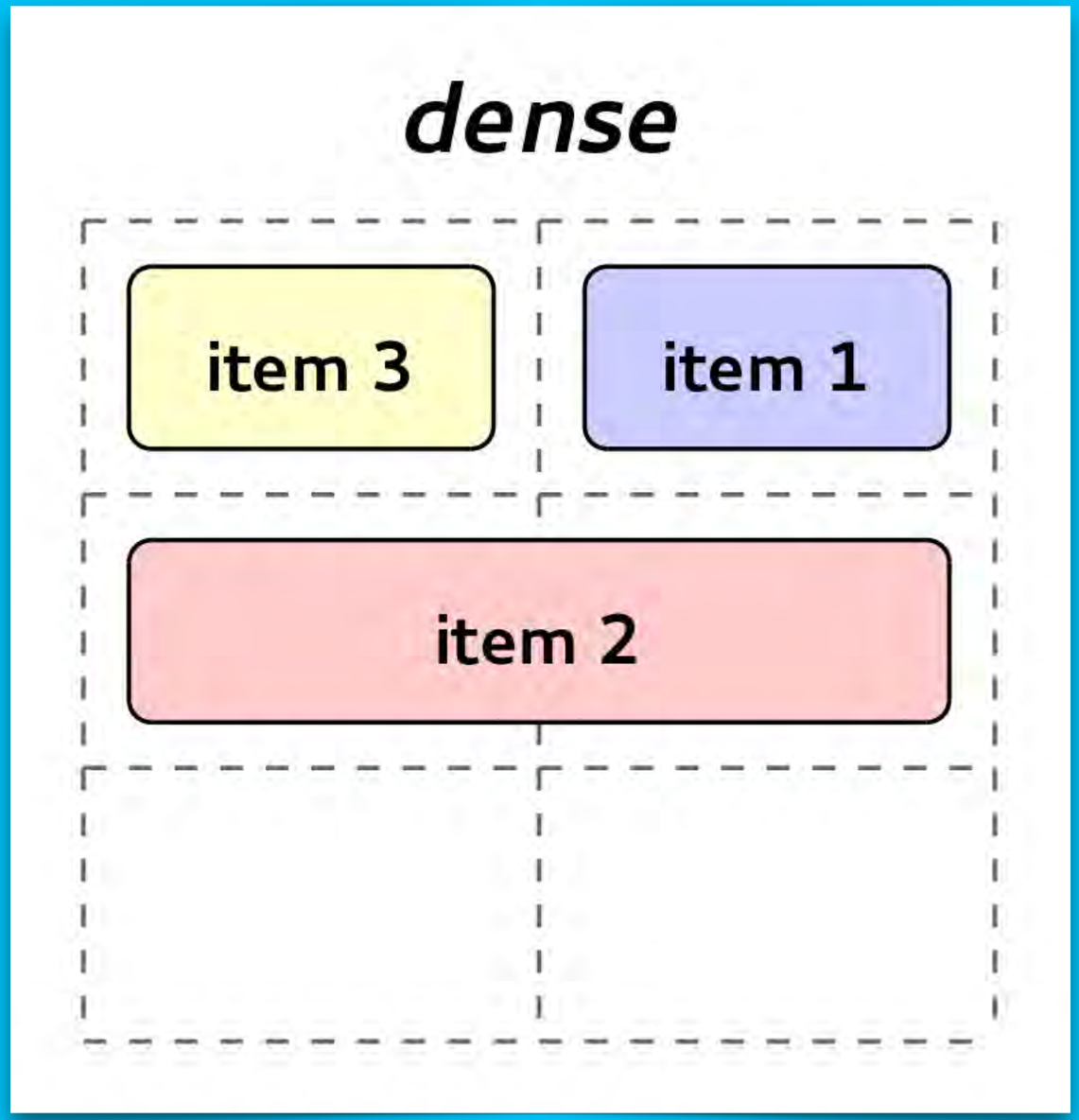
- SHORTHAND:
- align-content & justify-content
- Position content in center:
  place-content: center center;

```
.grid-container {
    display: grid;
    grid-template-columns: 100px 50px 100px;
    grid-template-rows: auto;
    grid-auto-rows: minmax(200px, 1fr);
    gap: 1em;

    place-content: center stretch;
}
```

THE PARENT - TEMPLATE

GRID-AUTO-FLOW

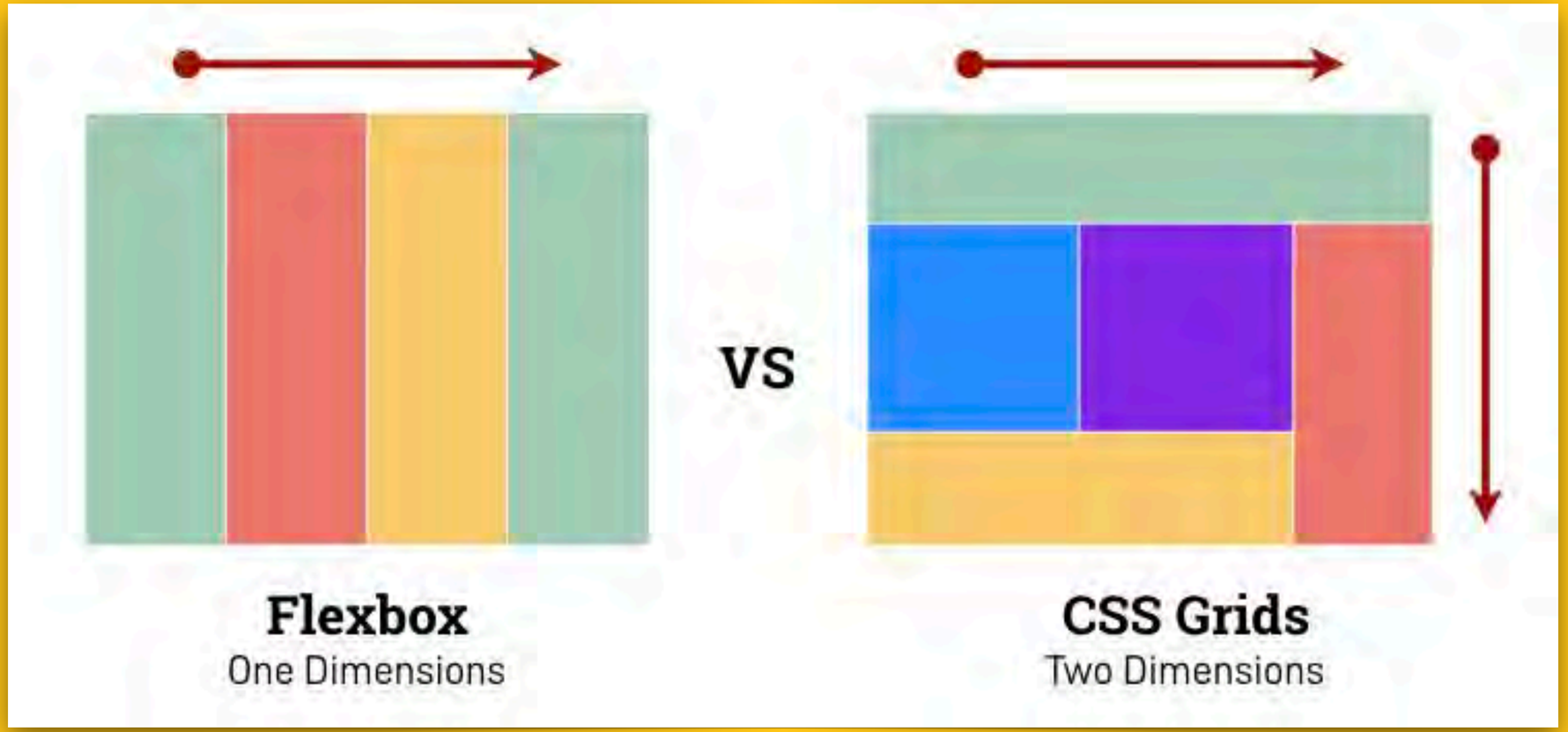
- Like flex-direction
- Values:
  - row (default)
  - column
  - dense —>
    tells the auto-placement algorithm to attempt to fill in holes earlier in the grid if smaller items come up later



SPECIAL USES:

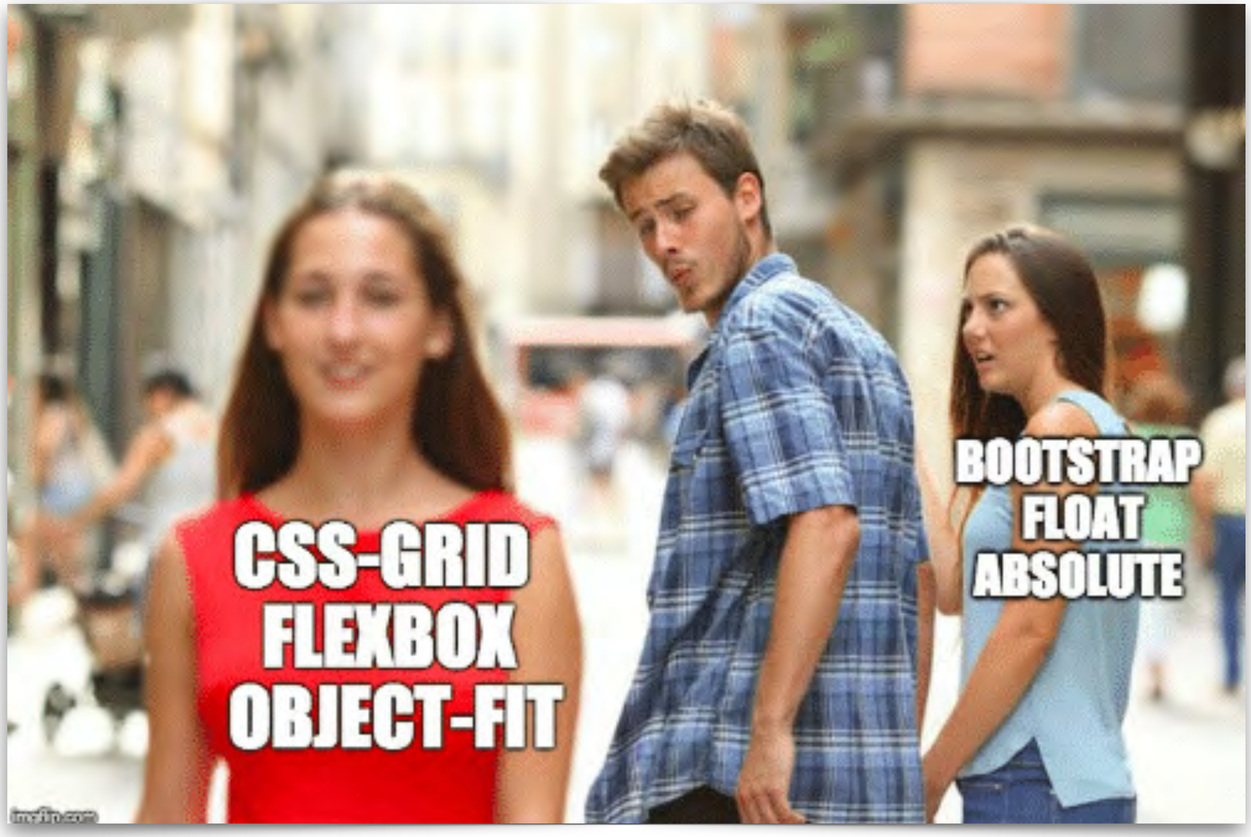
- repeat(x,y): takes two values: repeat(amount of rows/columns, unit)
- span: instead of specifying end row/column, set how many cells you want the item to span! But only works with positive values: span 2
- grid-auto-fill: grid does the math for you and essentially makes your grid responsive, can replace media-queries, if used with minmax
- grid-auto-fit: always ends grid after last item and expands elements inside grid. THE one line of code you should remember!
- grid-row/column: 1/-1 —> easy use to emulate width: 100% on grid!
- Empty space: simply use a dot (.)
- Create mosaic-grid layouts by overlapping items and using z-index to determine hierarchy
- order: Use carefully, it will mess up your accessibility (focus order)

SO WHICH ONE DO I USE?



YOU USE BOTH!

- You can use both Flexbox and Grid in the same project!
- Use Grid for:
  - Building layout first
  - Larger page layouts
  - Controlling rows and columns
  - Overlapping elements
- Use Flexbox for:
  - Building content first
  - Small, one-dimensional components
  - Controlling rows or columns
  - Dynamic spacing between elements



QUESTIONS?


WHOA, I KNOW
CSS-GRID
memegenerator.net

CSS GRID RESOURCES

- A complete guid to CSS Grid:

  https://css-tricks.com/snippets/css/complete-guide-grid/
- Grid Garden:

  https://cssgridgarden.com/
- Grid by Example:

  https://gridbyexample.com/

REAL LIFE EXAMPLES

- https://codepen.io/michellejames/pen/QWGGvLp?editors=0110
- https://codepen.io/girlgeek/pen/OgqBgj?editors=1100
- https://codepen.io/andybarefoot/pen/wrXvLj
- https://codepen.io/winkerVSbecks/pen/KmoxJp

HOMEWORK - CSS GRID

- Practice your new CSS Grid knowledge by completing the CSS Grid Garden Tutorial! Take a screenshot at the end by clicking on the level, revealing 28 checkmarks so I can be sure you did all levels and submit it along with homework! I want a screenshot from your entire desktop, open tabs, date, time - the whole shebang!
- Use the provided Adobe XD file to recreate the layout using CSS Grid.
- Export all the images you need from the file and optimize them with the tools and techniques we've already learned, if needed.
- Add an additional design for the tablet/small desktop breakpoint. It should fit seamlessly between mobile and desktop layout.
- As usual, the page must be fully responsive. Please use Sass and BEM in your CSS.
- Submit a link to your GitHub repo.

FIN