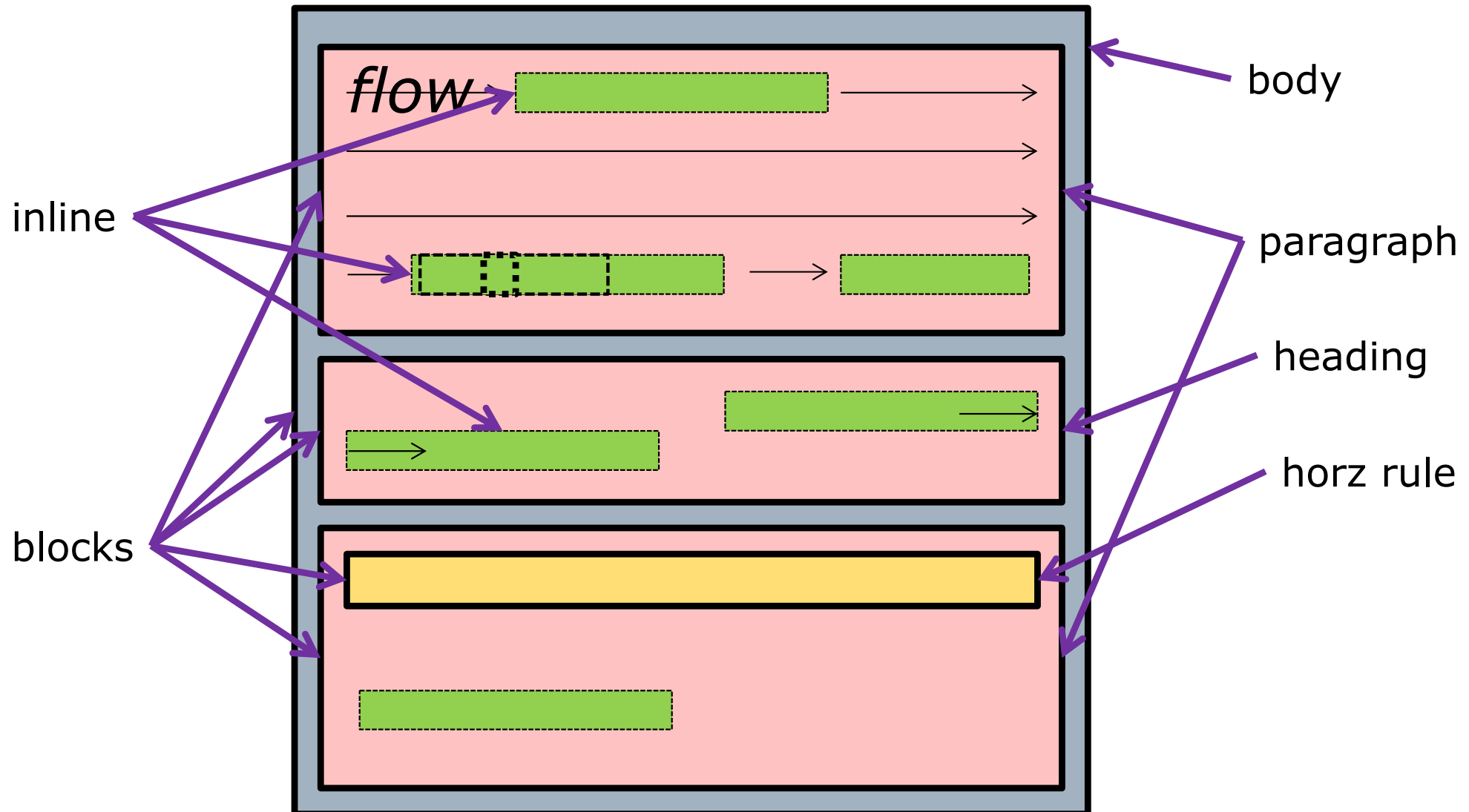


Floats, Grids, and Fonts

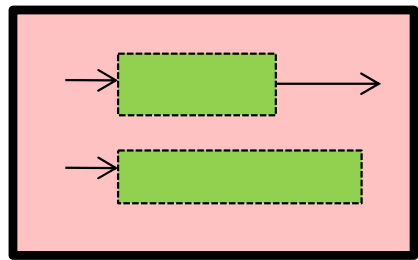
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Lecture 19

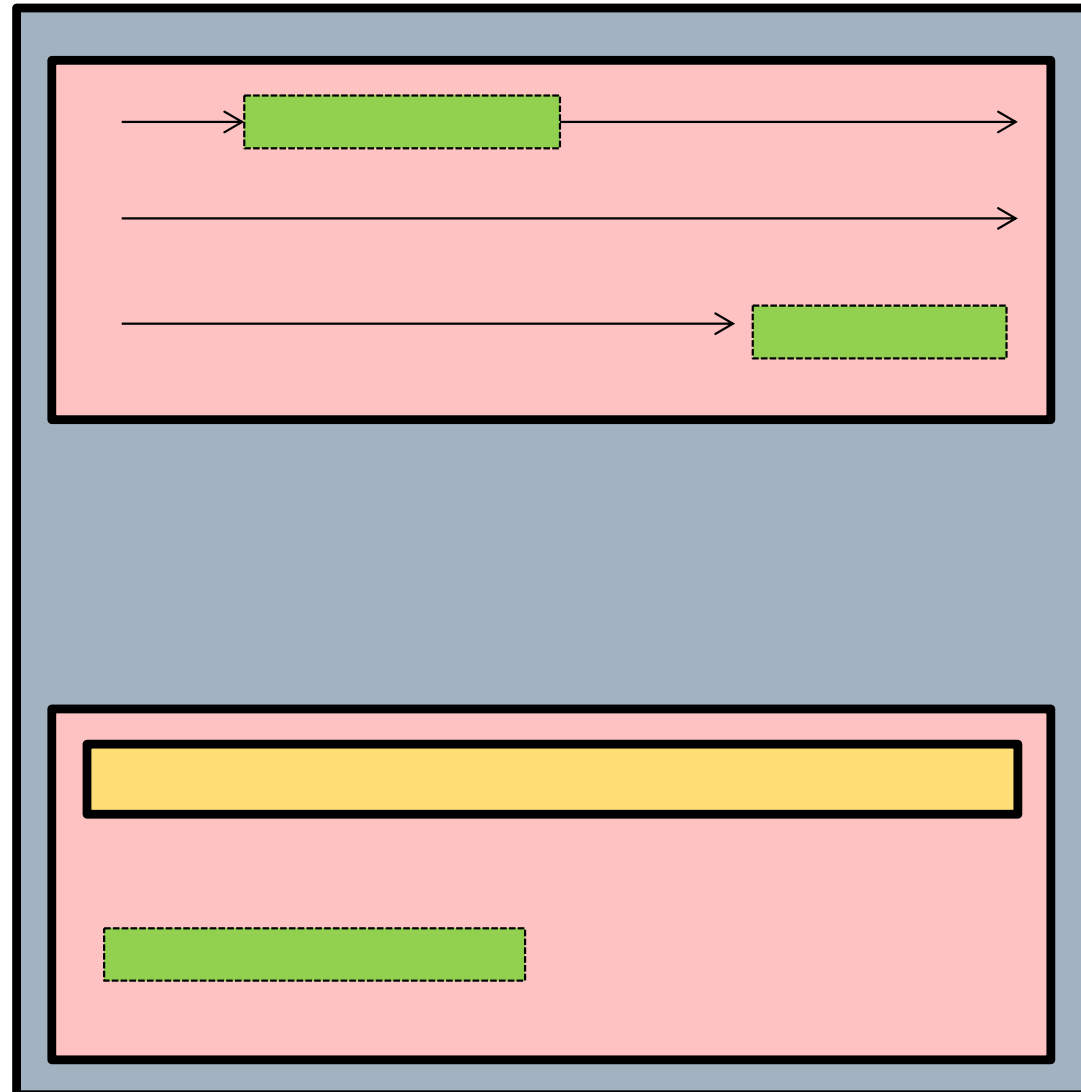
Recall: Blocks, Inline, and Flow



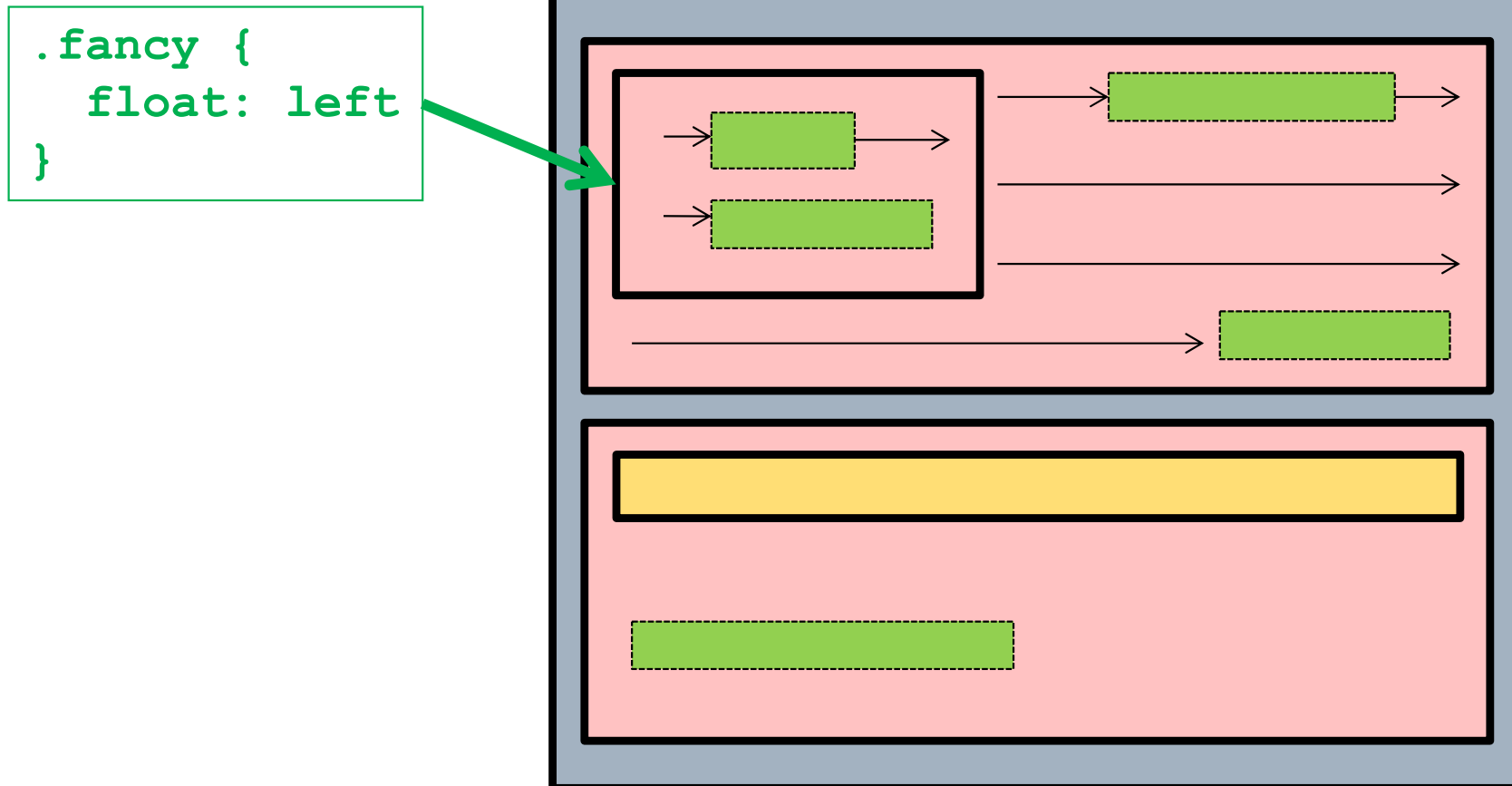
Floating: Remove From Flow



width

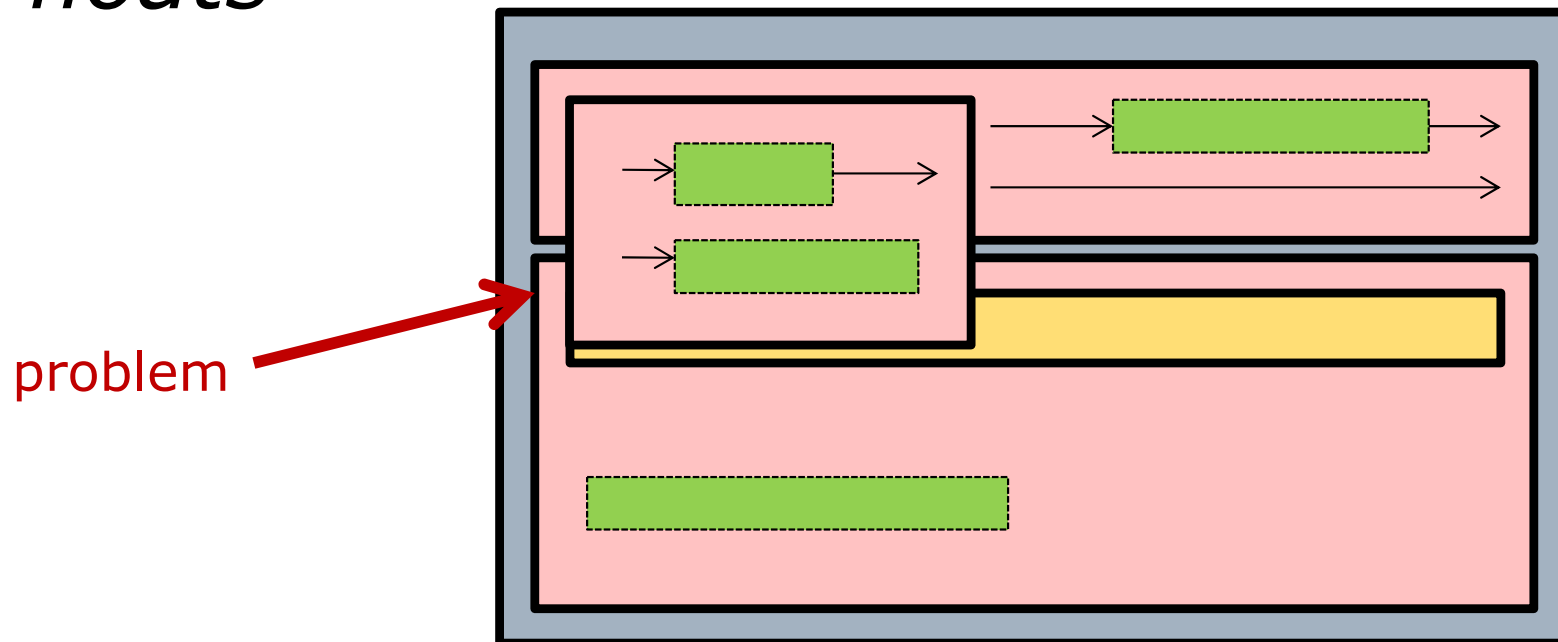


Floating: Overlays Block



Problem: Blocks Below

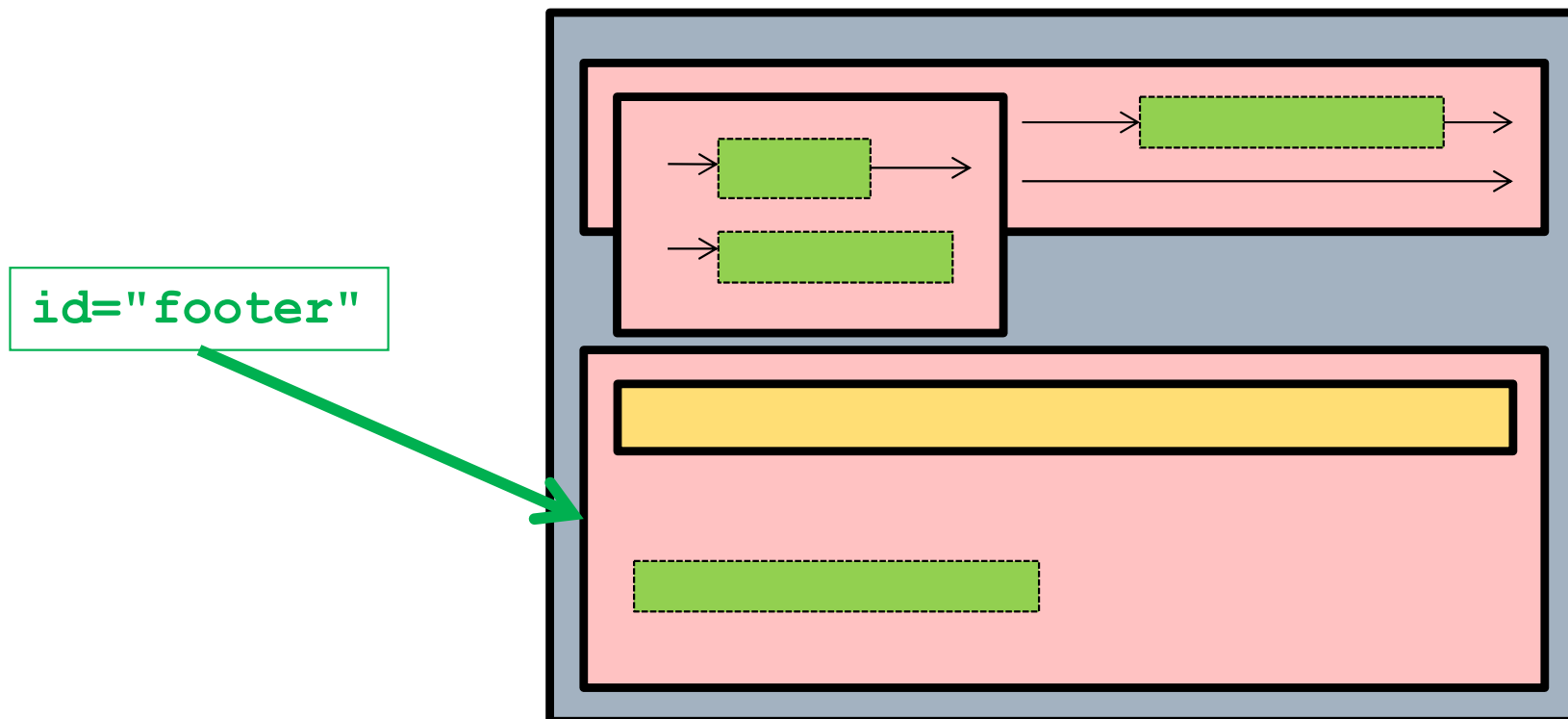
- ❑ Floating element may be taller than containing element
- ❑ May be undesirable, eg for footer that should be below everything *including floats*



Solution: clear

- ❑ Styling for block element *after* float

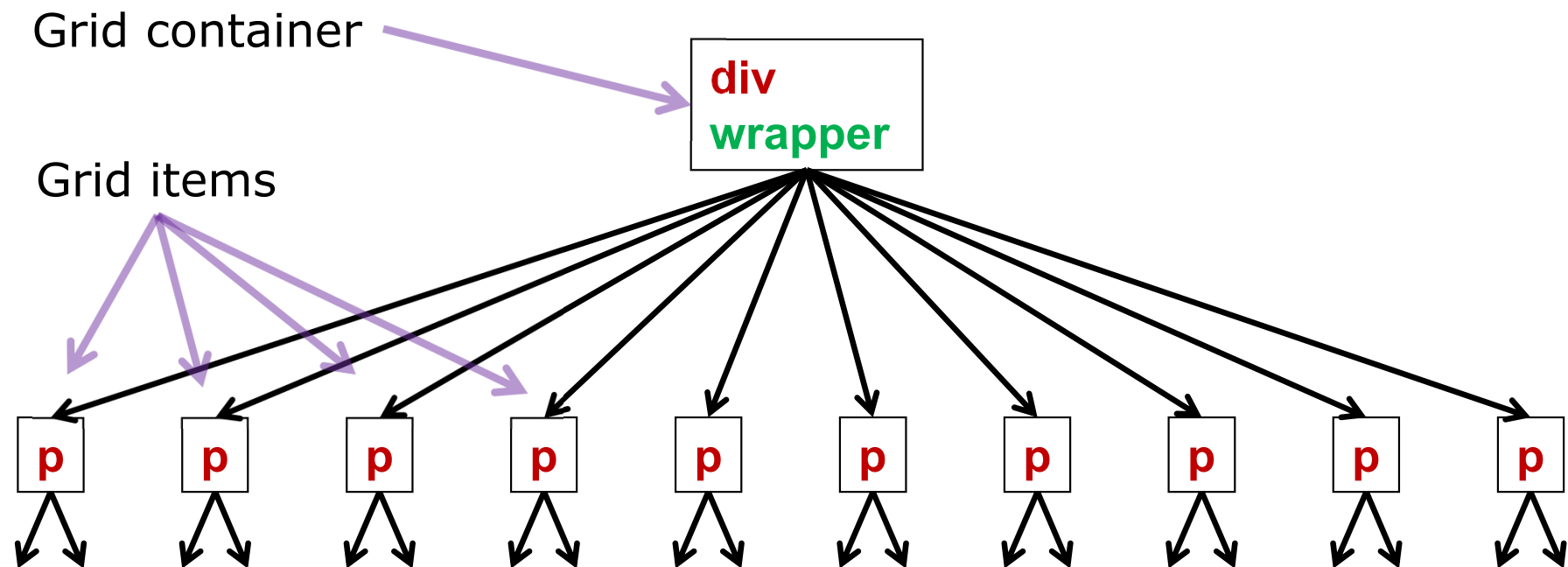
```
#footer { clear: left; }
```
- ❑ Requires *that* side to be clear of floats



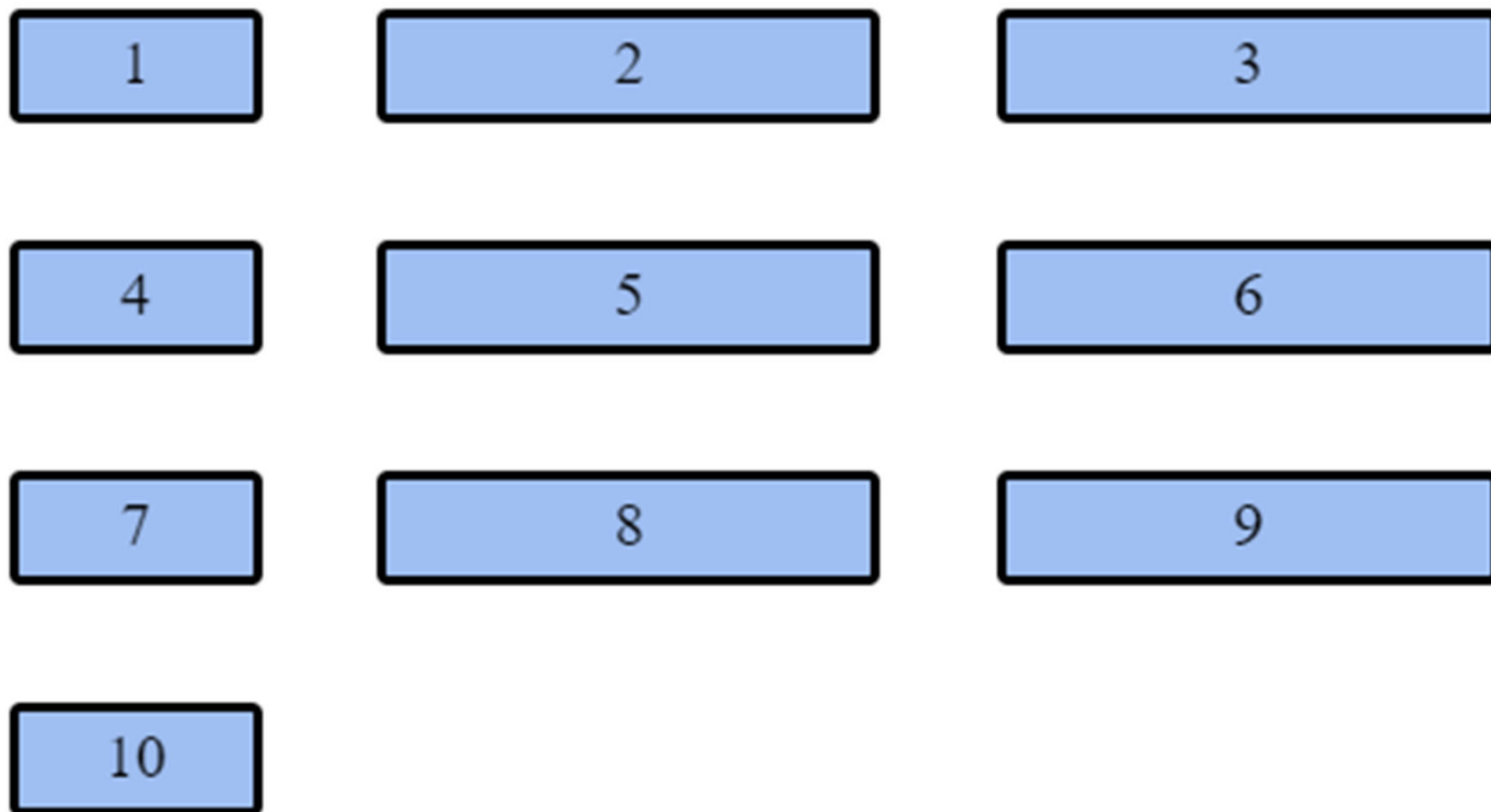
CSS: Grid Layout

- ❑ Display property for arranging elements in a 2D grid
- ❑ Parent element is the *grid container*
 - Style with CSS property (`display: grid`)
 - Set number/size of rows/columns
 - Set gap between rows/columns
- ❑ Direct children are the *grid items*
 - Set alignment, justification, placement
 - One item can be sized/placed to a *grid area* (ie a rectangular subgrid)

Grid Content as a Tree



Grid Layout: Example

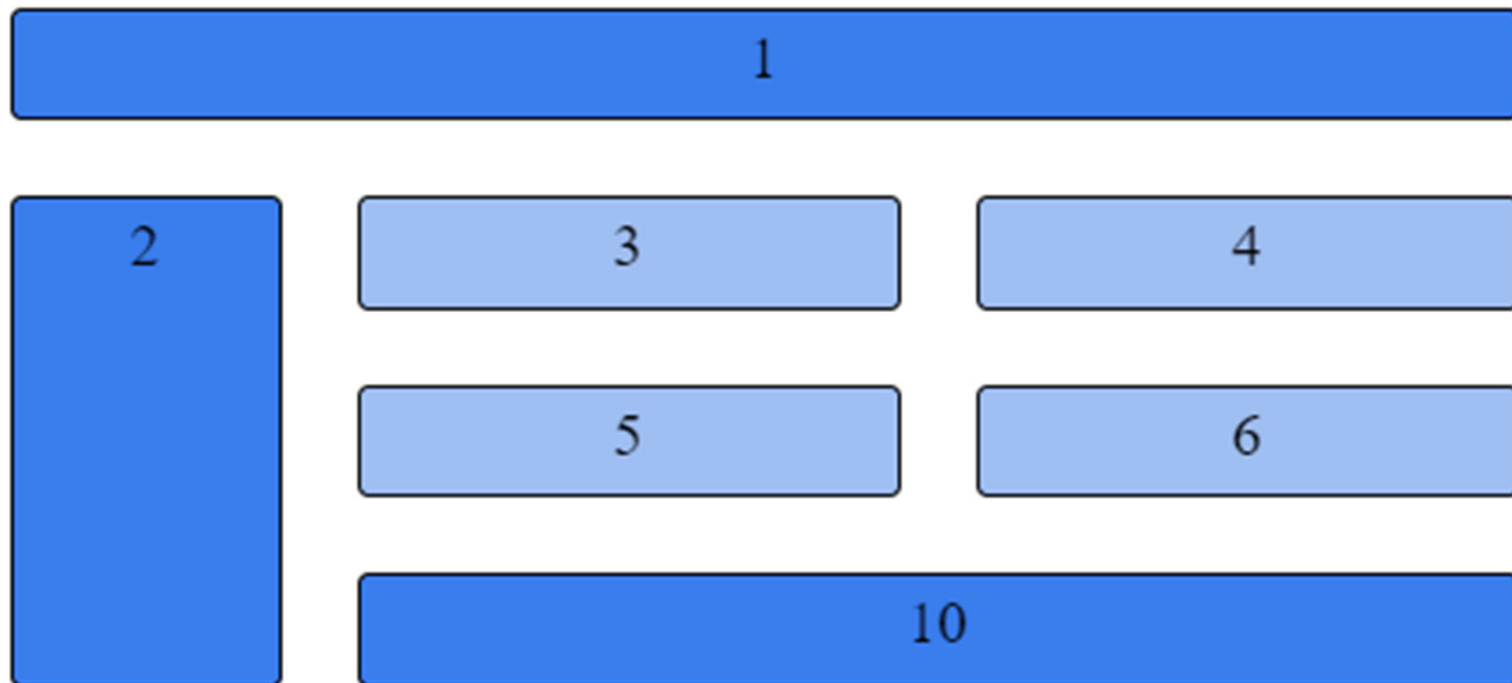


Grid Layout: Example

```
.wrapper {  
  display: grid;  
  grid-template-columns: 1fr 2fr 2fr;  
  grid-template-rows: repeat(4, 20px);  
  grid-gap: 20px;  
}
```

```
<div class="wrapper">  
  <div>1</div>  <div>2</div> ...  
</div>
```

Grid Areas: Example



Grid Areas

```
.top { grid-area: tp; }
.sidebar { grid-area: sd; }
#footer { grid-area: ft; }

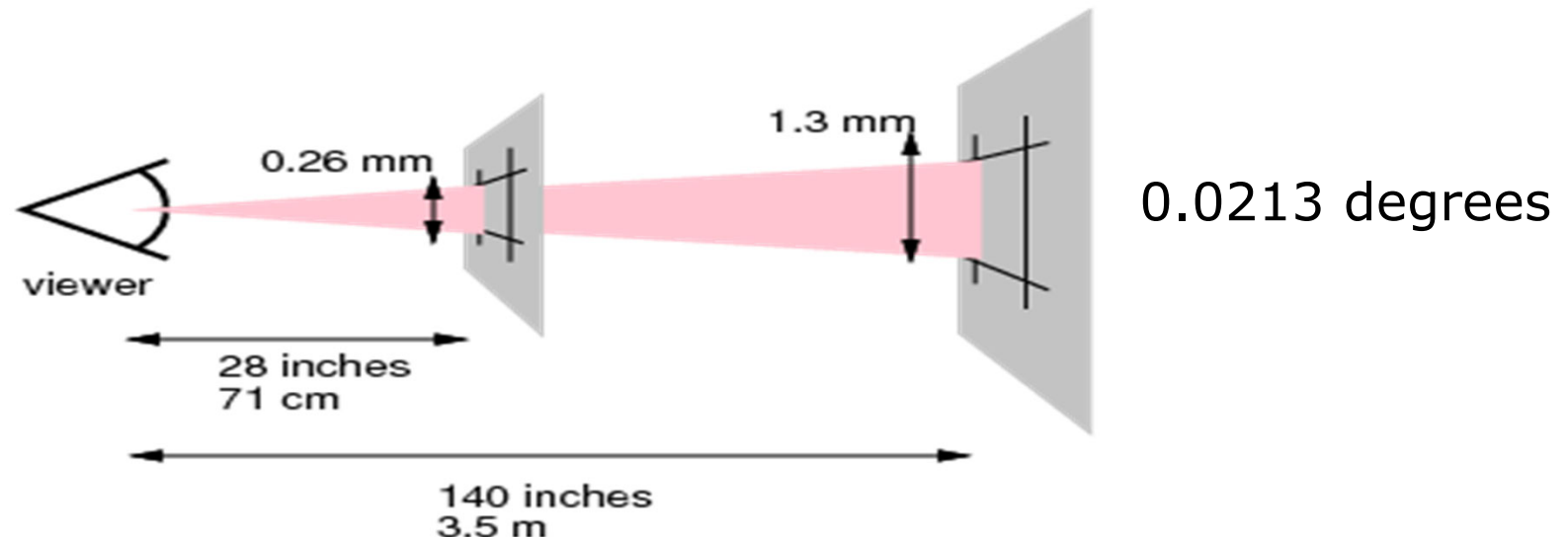
.wrapper {
  display: grid;
  grid-template-columns: 1fr 2fr 2fr;
  grid-template-areas:
    "tp tp tp"
    "sd . ."
    "sd . ."
    "sd ft ft";
}
```

CSS Units for Size

- “Absolute” units (but browsers cheat)
 - `in`, `cm`, `mm`
 - `pt` (point) = 1/72 inch, `pc` (pica) = 12 pts
- Absolute (for a given resolution)
 - `px` (pixels)
- Relative to current element’s font
 - `em` = width of 'm' in element’s font
 - `ex` = height of 'x' in element’s font
- Relative to parent (or ancestor) size
 - `%`, `rem` (like `em`, but with root’s font)
- Standard advice for fonts:
 - Prefer relative units

Aside: The Problem with Pixels

- Historically, pixel size was determined by hardware (screen resolution)
 - ppi: pixels per inch
- Problems using **px** unit:
 - Different resolutions = different size of **px**
 - Different devices = different view distances
- Solution: W3C's "reference pixel" (*optics*)

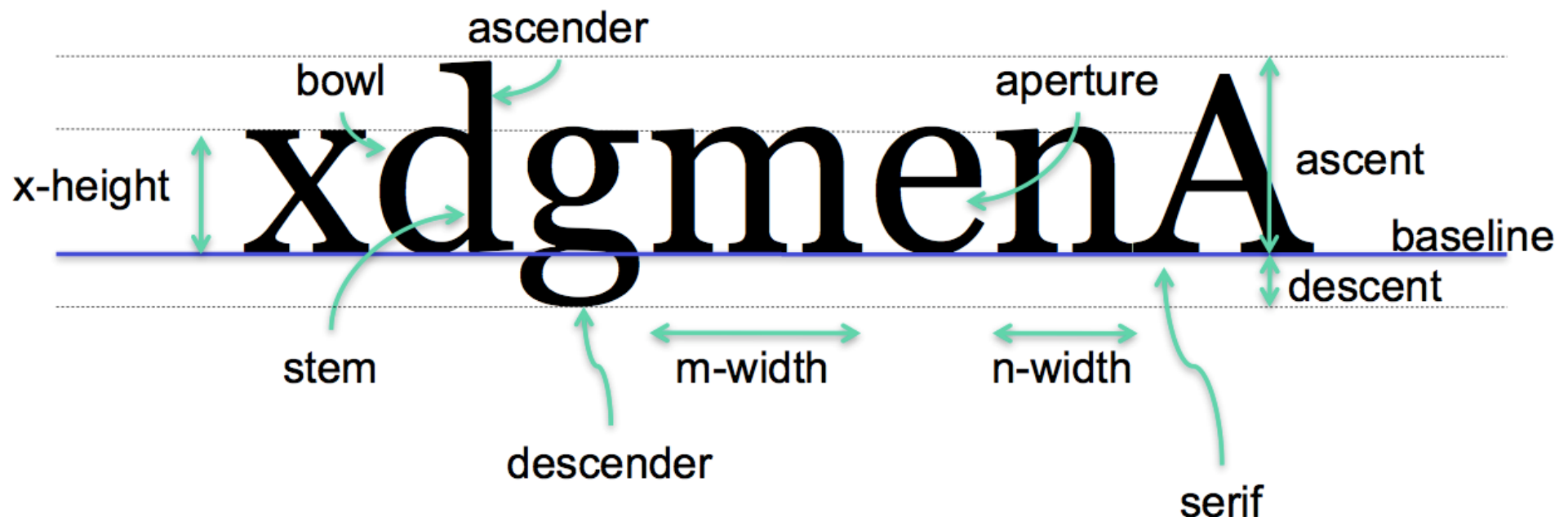


Fonts: Concepts

- Fonts are a key part of visual design
 - Serious, technical, whimsical, friendly...
- Font = family, weight, slant, etc
 - Family: **font-family**
 - Arial, Helvetica, Times, Courier, Palatino, Garamond, Verdana, Tahoma, Lucida,...
 - Weight: **font-weight**
 - thin, light, normal, bold, ...
 - 100, 200, 300, ..., 900
 - Slant: **font-style**
 - Normal, oblique, italic
- Font family should be “typeface”

Properties and Metrics

- ❑ Serif vs sans-serif
- ❑ Kerning: proportional vs monospace
- ❑ Size = ascent + descent (usually)
- ❑ m-width, x-height



Whitespace

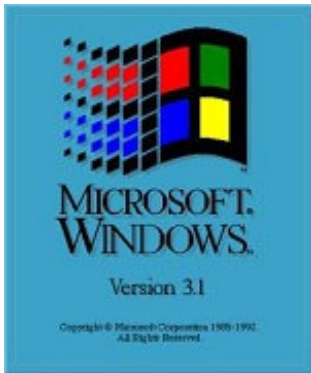
- ❑ Critical for aesthetics, readability
- ❑ Margins around body text, headings
- ❑ Leading
 - Space from baseline to baseline
 - CSS property: `line-height`
- ❑ Larger x-height = easier to read
 - But larger x-height also requires more line spacing
- ❑ “Music is the silence between the notes”

Font Families

- *De gustibus non est disputandum*
- Nevertheless, some common opinions
- Less is more: Use fewer fonts/sizes
 - Cohesive appearance
- Helvetica/Arial: clean but ubiquitous
 - They are identical / completely different
- Times is hard to read (on a monitor)
 - Better for print
- Comic Sans is for 12-year-olds and owners of NBA basketball teams

Identical & Completely Different

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Fallback Fonts

- Not sure what fonts host OS will have
- CSS font-family: List alternatives in decreasing order of preference

```
font-family: Helvetica, Arial,  
            "Liberation Sans", sans-serif;
```

- Always end with one of 5 *generic* fonts:

- | | |
|----------------------------|----------------|
| ■ sans-serif (Arial?) | example |
| ■ serif (Times New Roman?) | example |
| ■ monospace (Courier New?) | example |
| ■ cursive (Comic Sans?) | example |
| ■ fantasy (Impact?) | example |

- OS (and browser) determine which font family each generic actually maps to

CSS3: Web Fonts @font-face

- Looks like a selector, but is a “directive”

```
@font-face {  
    font-family: HandWriting;  
    src: url('PAGSCapture.ttf');  
}
```

- Font family then available in rest of CSS

```
p { font-family: HandWriting; ... }
```

- User agent dynamically downloads font
- Different syntaxes for font files
 - .ttf, .otf, .eot, .woff, .svg, ...
- Beware: copyright issues!
 - See fonts.google.com

Summary

□ Images

- Formats jpeg, png, gif, svg
- Tradeoffs of size, quality, features

□ Floating elements

- Removed from flow, layered on top

□ Fonts

- Fallback fonts to account for uncertainty
- Web fonts for dynamic loading