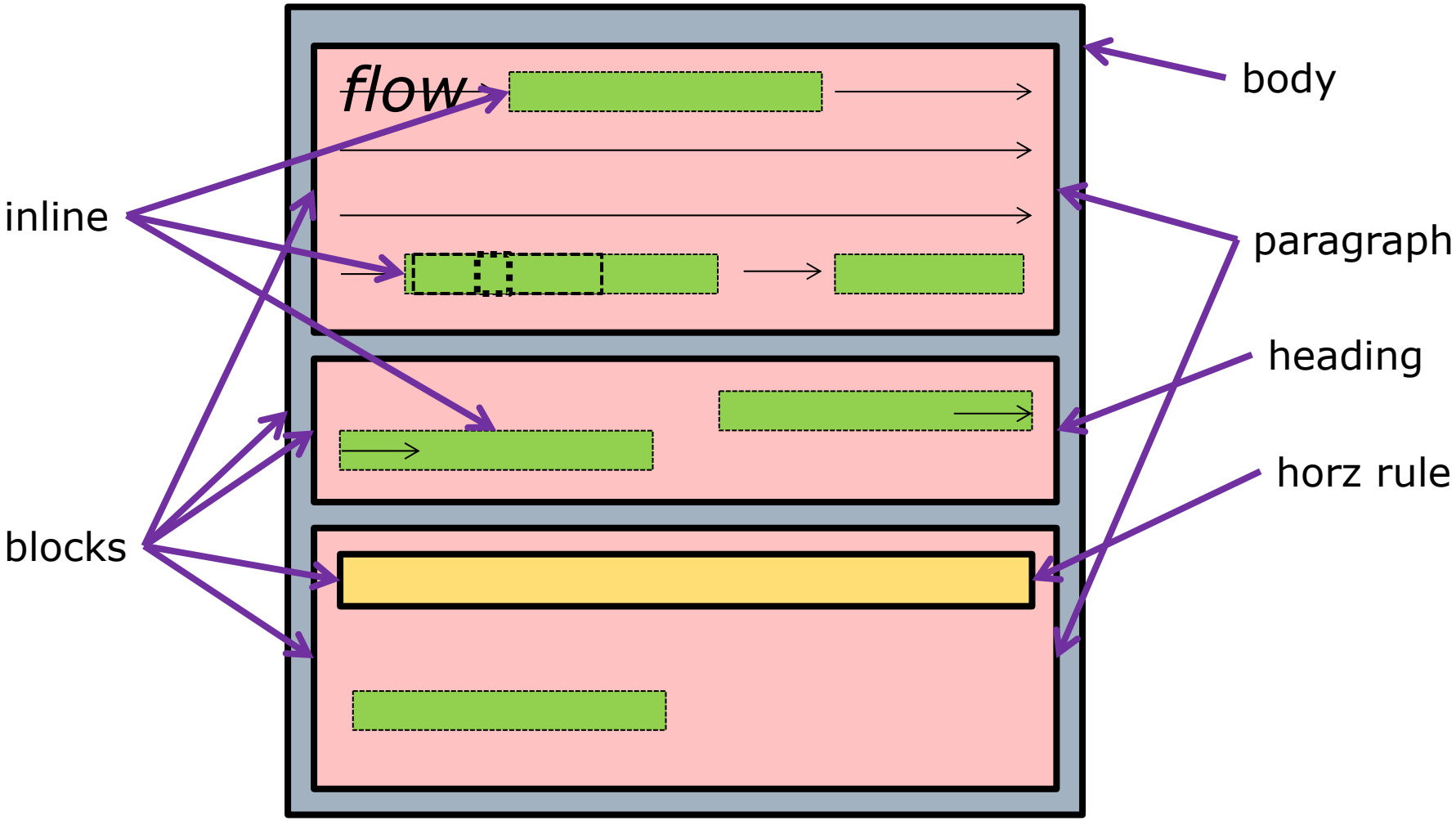
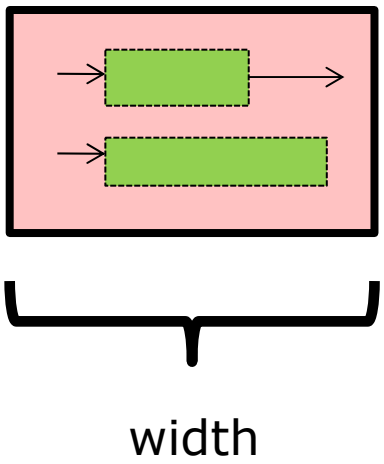
Floats, Grids, and Fonts

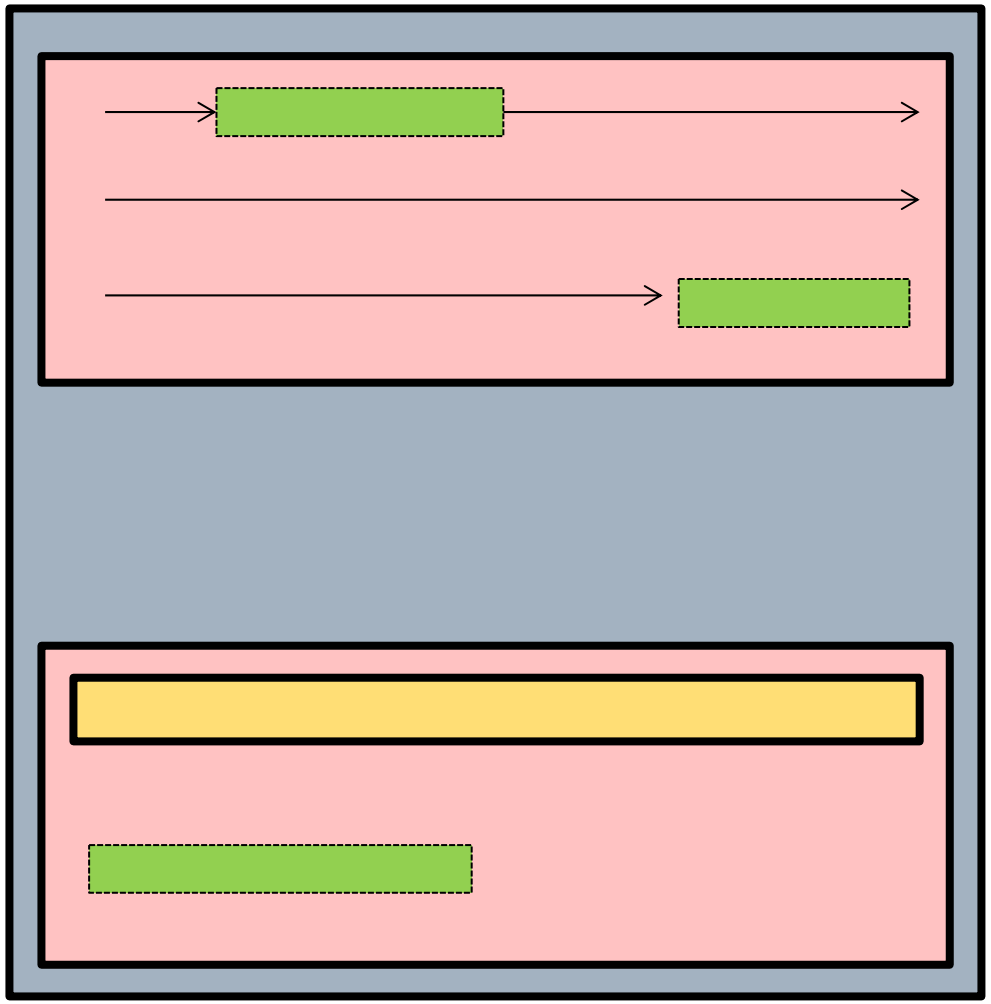
Lecture 18

Recall: Blocks, Inline, and Flow



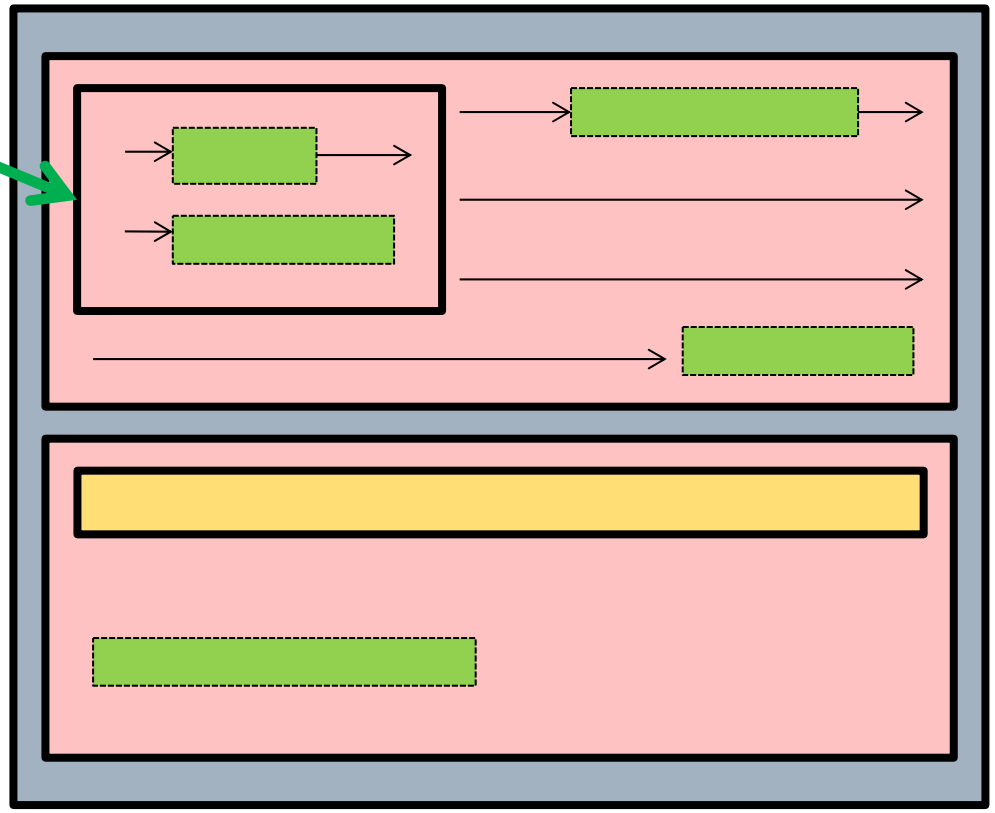
Floating: Remove From Flow





Floating: Overlays Block

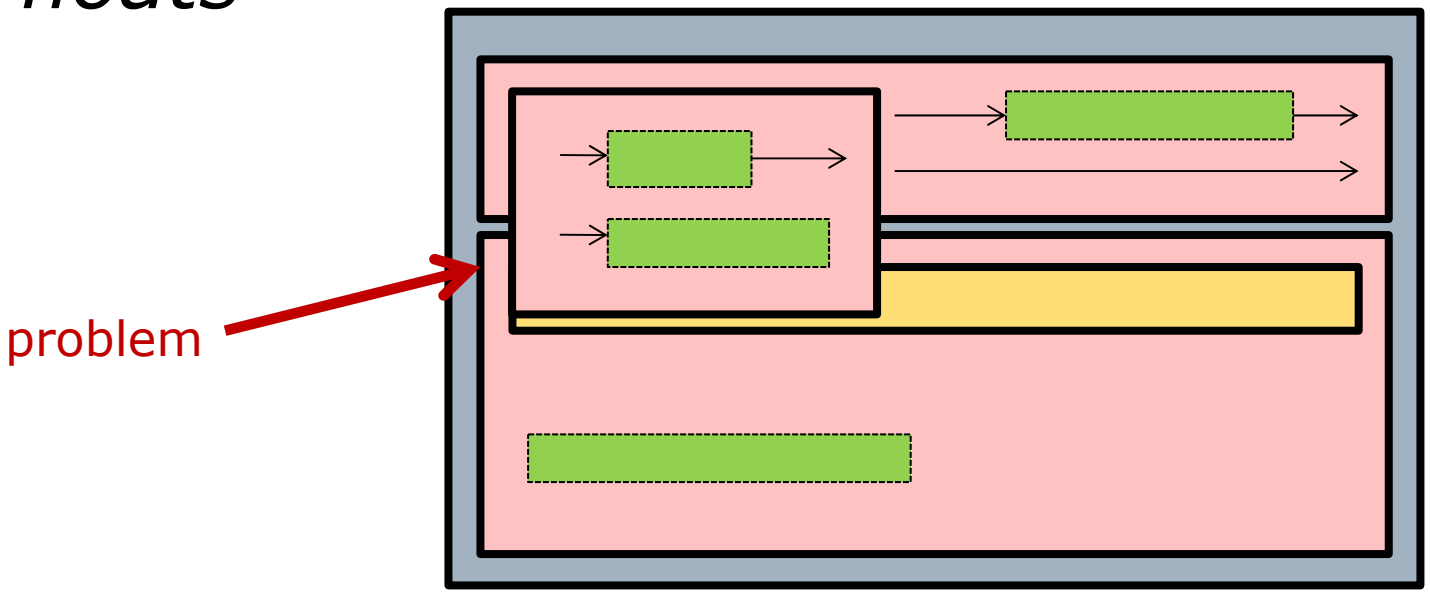

```
.fancy {
  float: left
}
```



codepen.io/cse3901/pen/bLYdLz

Problem: Blocks Below

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

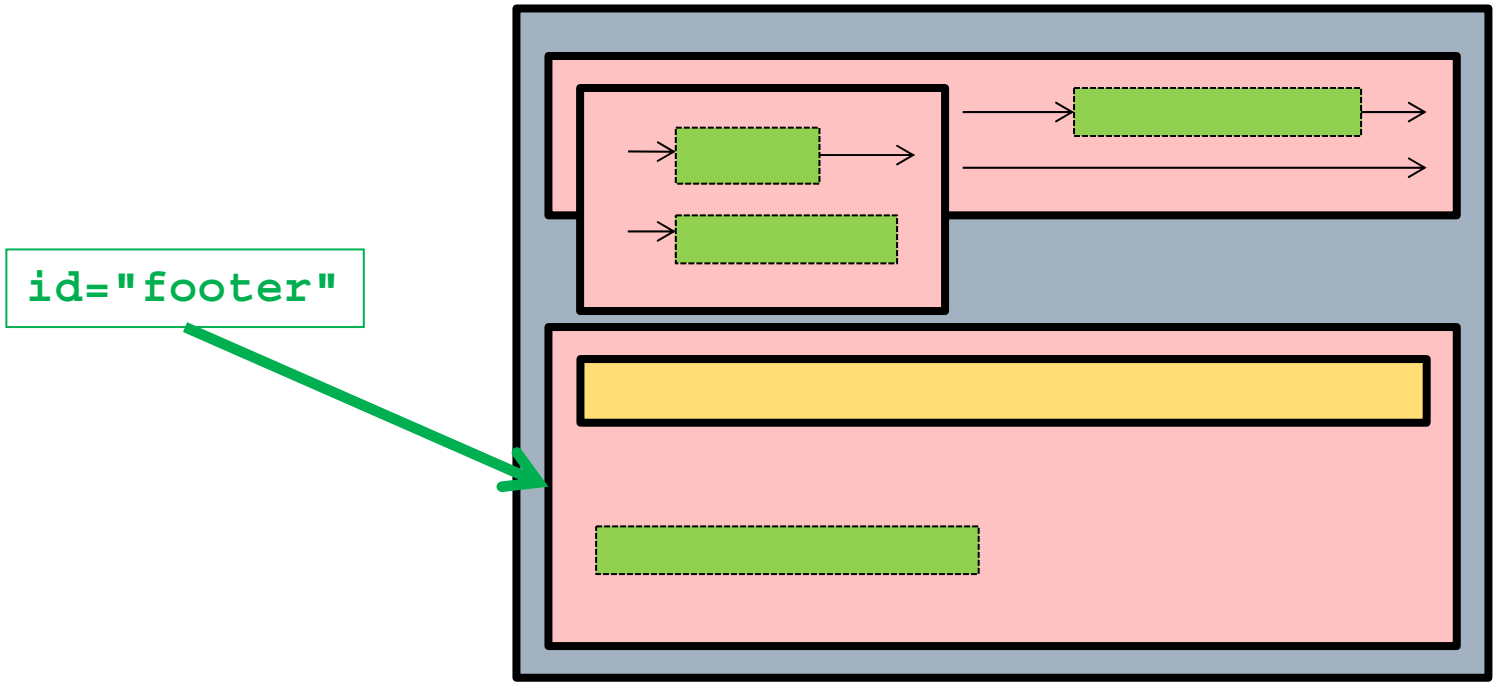


Solution: clear

- Styling for block element *after* float

```
#footer { clear: left; }
```

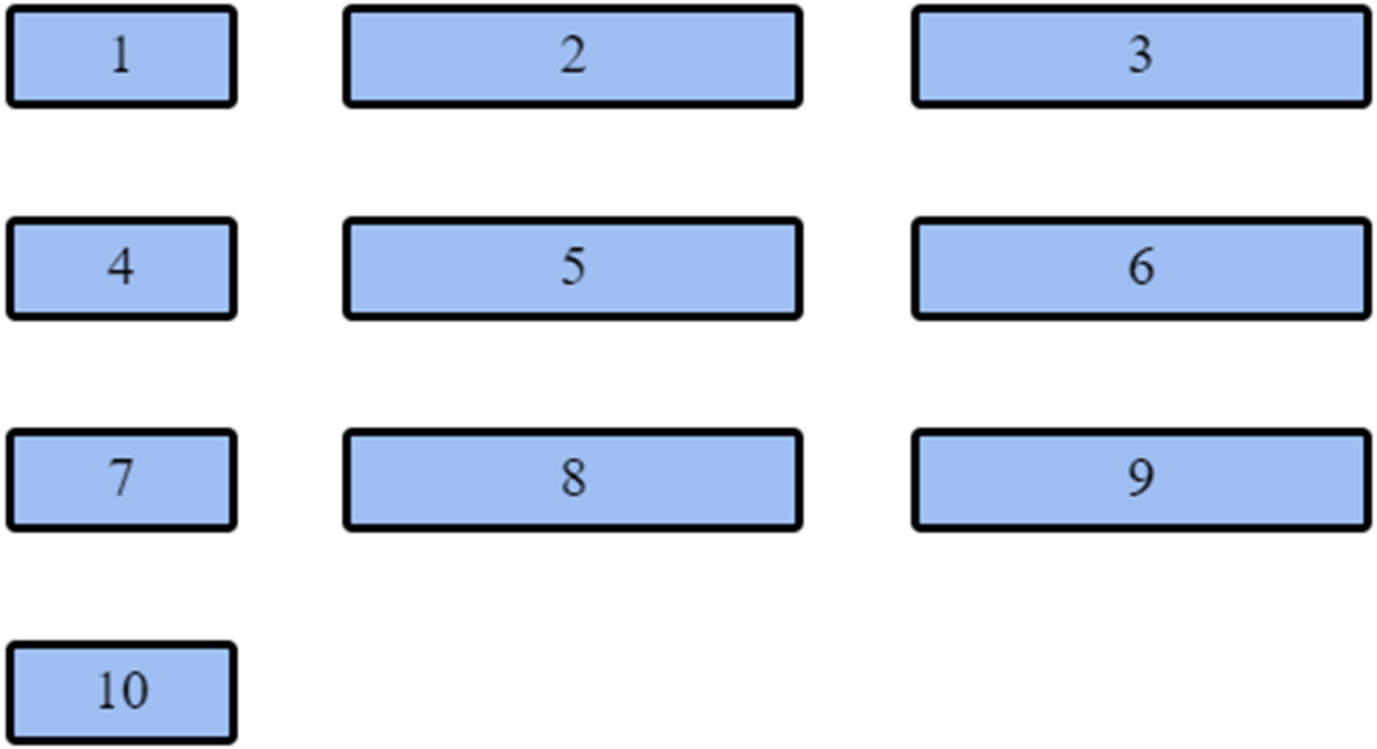
- Requires *that* side to be clear of floats



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 Layout: Example



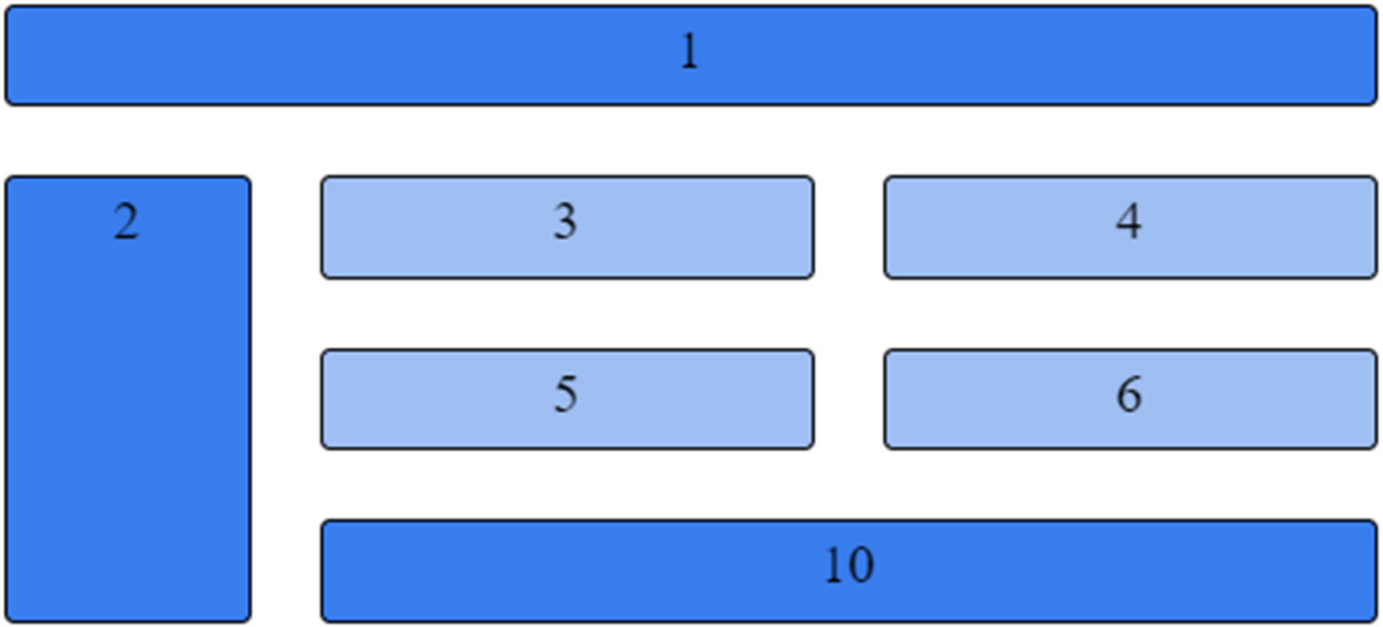
Grid Layout: Example


```
.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>
```

codepen.io/cse3901/pen/aqVNJN

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";
}
```

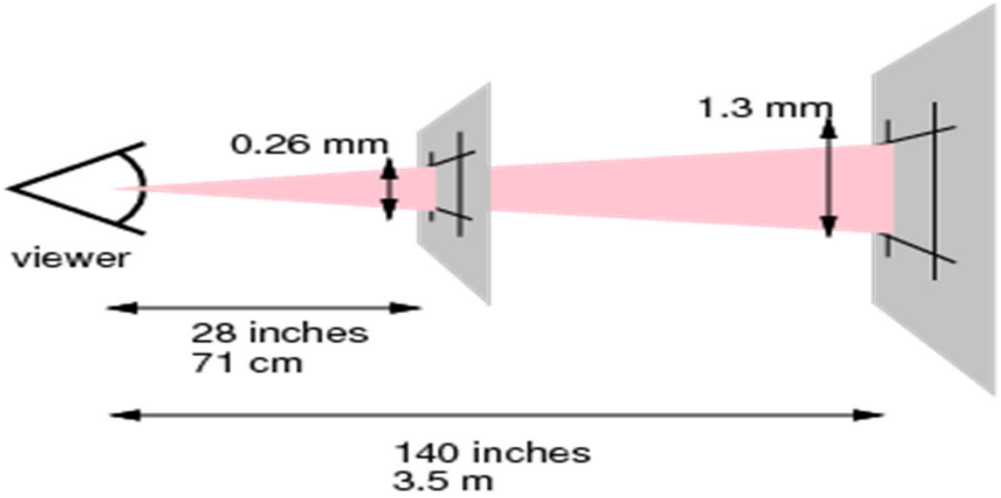
codepen.io/cse3901/pen/oEoKXV

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 determined by *hardware* (ie 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*)



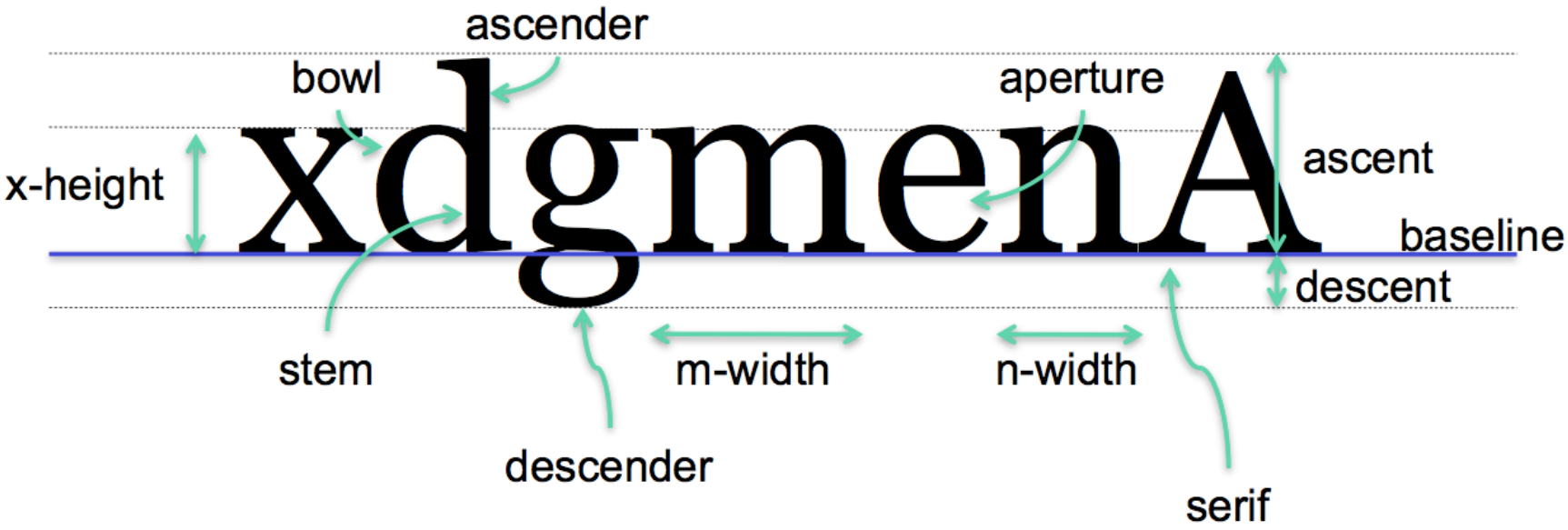
0.0213 degrees

Fonts: Concepts

- Fonts are a key part of visual design
  - Serious, technical, whimsical, friendly…
- Font family (should be "typeface")
  - Arial, Helvetica, Times, Courier, Palatino, Garamond, Verdana, Tahoma, Lucida,…
- Font = typeface + weight, slant, etc
  - Normal, bold, lighter (CSS: font-weight)
  - Normal, oblique, italic (CSS: font-style)

Properties and Metrics

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



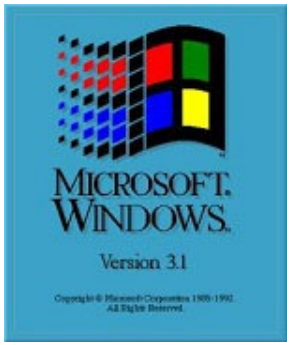
Whitespace

- 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



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