

# Responsive Design Fundamentals

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# Styles...in the beginning

- separation of content from presentation;
- capability to change layout, format text and apply color schemes, etc.;
- ...and it was good.



# Flexible/Liquid Styling

- based on % of browser size;
- use of relative values, e.g. “ems”
- allowed us to design in response to changing desktop and laptop monitor sizes.



# Now...Responsive Design

- web design strategy focused on designing your content so that it responds to the environment it's encountered in;
- first coined by [Ethan Marcotte](#), defined 3 fundamental techniques:
  - fluid grids for flexible layouts;
  - media queries to help adapt content to specific screen sizes/media types;
  - flexible images & media that respond to changes in screen sizes;

# Advantages/Disadvantages of RD

- + do not have to create separate apps for each type of device
- + retain site branding/personality from one device to the next
- - not all selectors/properties are compatible with all browsers; esp. CSS3
- - use of javascript/jquery, etc. to manage some behaviors which is inherently incompatible across all browsers
- +/- give up some behavior/display control

# Understanding: Viewports

- Viewports are independent of screen itself;
  - Desktops:
    - any open browser window is defined as the viewport;
  - Mobile:
    - viewport designed to be larger than the screen's resolution;
- Control of the Viewport:
  - Page meta tag:

```
<head>  
  <meta name="viewport" content="width=device-width">  
</head>
```
  - CSS rule:

```
@viewport {  
    width: device-width;  
}
```

# Understanding: Screen Density

- The number of pixels within a physical area of a screen.
- Hardware Pixels:
  - The smallest point the screen can display;
- Reference Pixels:
  - Aka CSS pixel; unit of measurement that establishes an optical standard for the length of a pixel and is totally independent of hardware pixels;
  - Device applies a scaling factor or device-pixel-ratio to ensure same size



# Image Efficiency

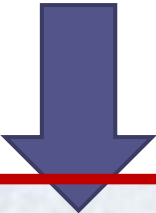
- CSS-based graphics:
  - Icons, buttons; scales well; has limitations;
- Individual graphics for each targeted screen size:
  - Mobile: smallest
  - Tablet: mid-size
  - Desktop: largest






# Image Efficiency

- Images as Backgrounds:
  - If image is not a link, retrieve it as a background within a container.
  - Layer background images.



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# Image Efficiency


- Sprites:
  - A technique that combines an unlimited number of images into one graphic and through styling, only display the part that you want to see where you want to see it.



**DESOLVE** *fine urban photography*

 **GALLERIES**  
explore our photos

 **GEAR**  
our favorite equipment

 **INTERACT**  
contact, follow, or submit your own

 **SHOP**  
buy our stuff!

# Responsive Magic

- The media queries:

- Mobile:

- @media only screen and (max-width: 480px) {  
....selectors and properties set here;  
}

- Tablet:

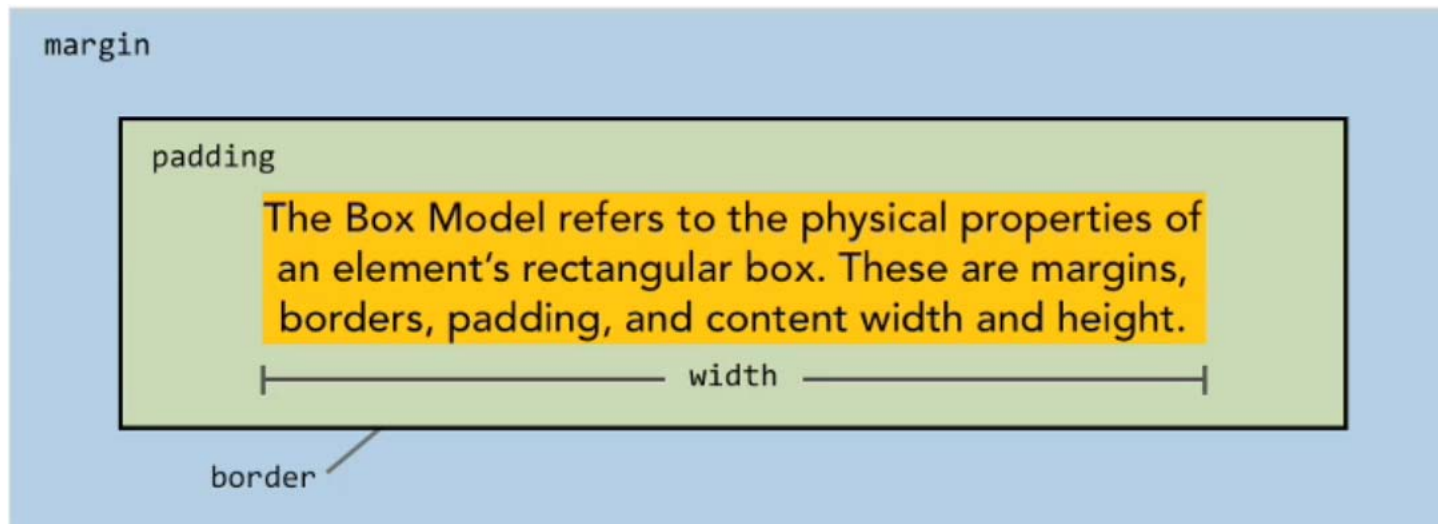
- @media only screen and (min-width: 481px) and (max-width: 768px) {  
....selectors and properties set here;  
}


- Desktop


- @media only screen and (min-width: 769px) {  
....selectors and properties set here;  
}

# Responsive Design Principles


- Retain the Box Model:



 **GALLERIES**  
explore our photos

 **GEAR**  
our favorite equipment

 **INTERACT**  
contact, follow, or submit your own

 **SHOP**  
buy our stuff!



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# Responsive Design Principles

- Retain the Box Model;
- Let Normal Document Flow work for you:
  - By default a web page flexes;
  - Use behavior of the **Cascading** Style Sheet;
- Cascade, Inheritance and Specificity



# Steps to Pull It All Together

## 1. Decide on target devices and sizes:

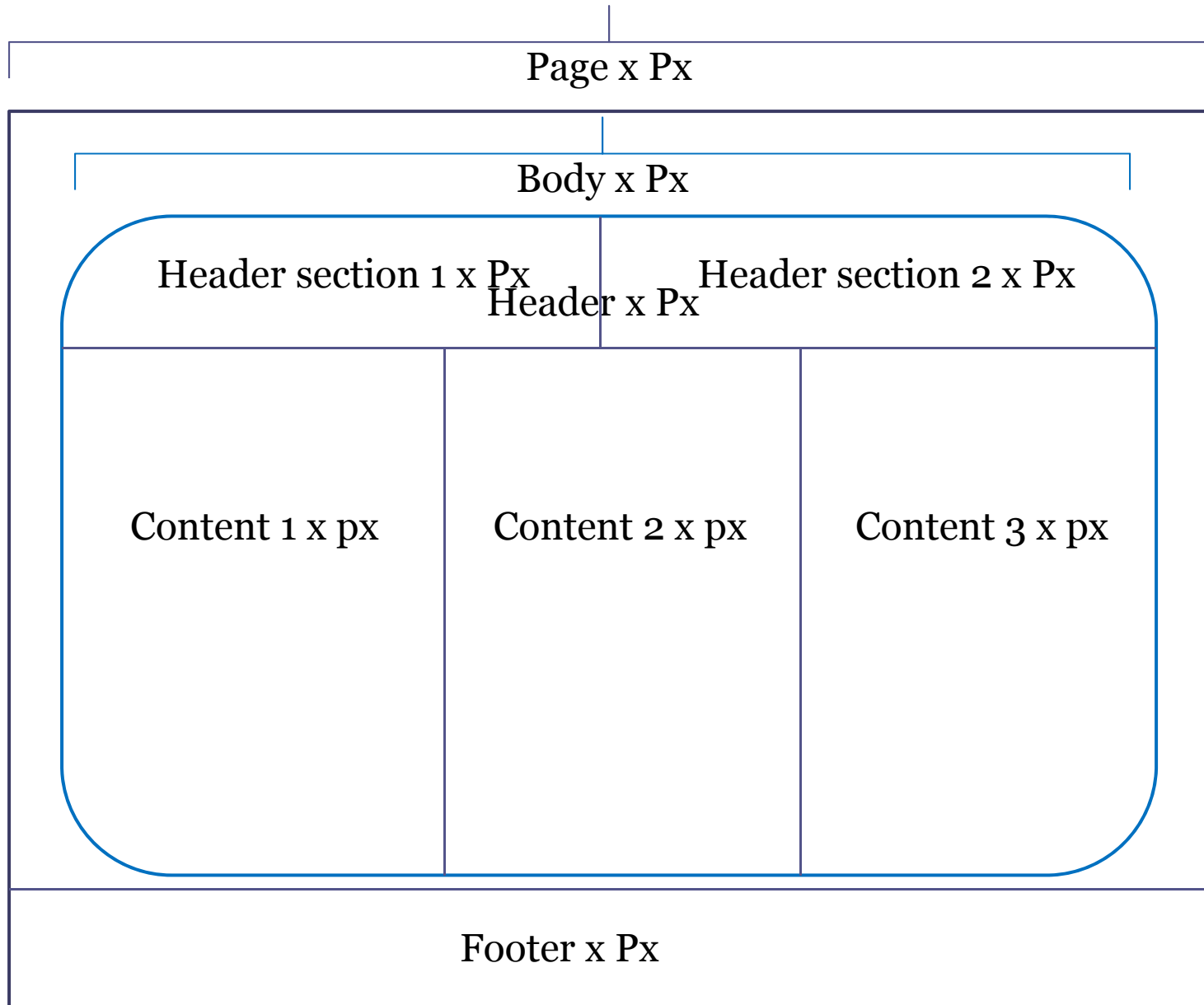


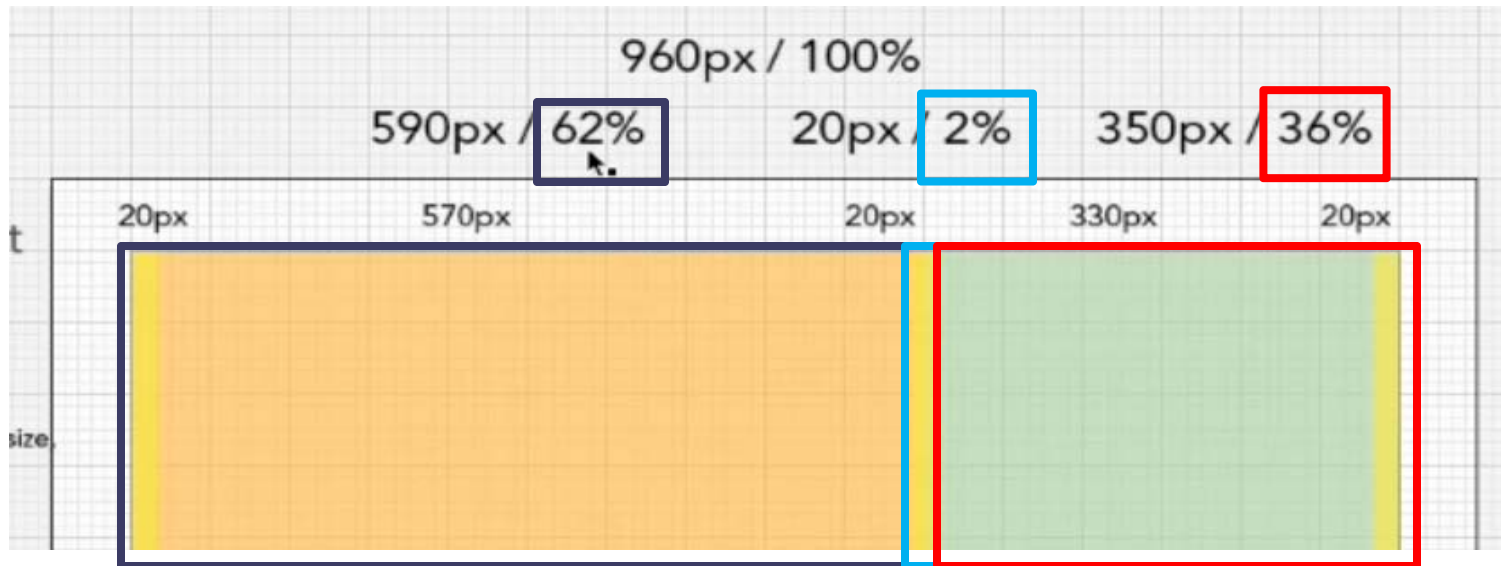


# Continuing to Pull It All Together

2. Decide on the goal of the page.
3. Layout the *basics* of the desktop style;

Sketch Sheet Sample





Body: 960 px

Column 1 (orange): 590 px

Padding (yellow): 20 px

Column 2 (green): 350px

To calculate % for column 1 (orange) element:

Padding: 20px / parent WHICH IS BODY 960 px = **2%**

Content: 570 / 960 = **60%**

Our 3 sections are then defined at 62%, 2% and 36%.

Page x Px

Body x %

Header graphic w/ mini menu  
x %

Content 1  
x %

Content 2  
x %

Content 3  
x %



Cool Inspiration

# Recap

1. Select your target devices and sizes.
2. Decide on the goal of the page.
3. Initial sketch and/or prototype
  - Layout the *basics* of the desktop style.
    - Create layout w/ px
    - Convert px to %
4. Create the mobile layout.
5. Lay in the content elements with behavior.
6. Create the tablet layout(s).
  - Lay in content elements with behavior.

## References

- **Lynda.com: Author James Williamson**
  - CSS Core Concepts
  - CSS Page Layouts
  - Responsive Design Fundamentals
- **.Net and Bootstrap**
  - <http://bootswatch.com/spacelab/>
  - <http://getbootstrap.com/getting-started/#examples>
  - <http://blogs.msdn.com/b/webdev/archive/2013/10/17/announcing-release-of-asp-net-and-web-tools-for-visual-studio-2013.aspx>

# References

- **Viewport sizes:** <http://i-skool.co.uk/mobile-development/web-design-for-mobiles-and-tablets-viewport-sizes>
- **CSS Reference:** <http://www.w3schools.com/cssref/default.asp>
- CSS Standards: <http://www.w3.org/TR/CSS/>  
[www.w3.org/Style/CSS/current-work.en.html](http://www.w3.org/Style/CSS/current-work.en.html)
- CSS3 Generator (w/ vendor prefixes): <http://www.css3generator.com/>
- Media Queries Reference: <http://www.w3.org/TR/css3-mediaqueries/>
- **Media Query Samples:** <http://mediaqueri.es/>
- Font Families: <http://www.typetester.org/>
- Colors: <http://kuler.adobe.com>
- Ems & Pxs Conversion Chart: <http://pxtoem.com/>
- Sketch Sheets: <http://jeremypalford.com/arch-journal/responsive-web-design-sketch-sheet>
- CSS Resets: <http://www.cssreset.com>
- CSS Debugging for IE: [http://www.microsoft.com/download - search for IE Developer Toolbar](http://www.microsoft.com/download-search-for-IE-Developer-Toolbar)
- JS to enable media query support for older IE browsers: <https://github.com/scottjehl/Respond>





# Thank You

Questions?

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