



MASSEY UNIVERSITY

COMPUTER SCIENCE & INFORMATION TECHNOLOGY  
SCHOOL OF FUNDAMENTAL SCIENCES

# Designing for the Mobile Web

Course textbook: Tutorial 5, p.341

# Example Case Scenario


*Marjorie Kostas* is the owner of Trusted Friends daycare, an early childhood and care centre located in Auckland. You have been hired to help work on the redesign of the company's website. Because many of her clients access the website from their mobile phones, Marjorie is interested in improving the website's appearance on mobile devices. However, your design still has to be compatible with tablet devices and desktop computers. Finally, the site contains several pages that her clients will want to print, so your design needs to meet the needs of printed media.



# The Trusted Friend Daycare Website for the Mobile Web


trusted friends daycare

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Trusted Friends Daycare provides childhood education and daycare, conveniently located for you and your child. We treat each child based on his or her own individual needs. Trusted Friends provides a qualified and experienced team of educators with expertise in early childhood development.

We structure each day around stimulating and educational activities that aid in your child's physical, intellectual, and emotional development. And we can accommodate your busy schedule with transportation to and from our school.

Call [\(317\) 555-7414](tel:3175557414) to schedule a tour or to learn more about our facilities and our instructors.


My son goes here and he loves it! We've been to two other daycare centers and this is by far the best. It offers small classes with a challenging and engaging curriculum. The children get a lot of individual attention and a lot of play time.

— Anita K.


I truly appreciate the cultural and ethnic diversity in the staff. They bring different traditions together and help the kids explore other cultures. They make everyone feel welcome and safe.

— Stefan Z.

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# Learning Objectives

1. Create a media query
2. Work with the browser viewport
3. Apply a responsive design
4. Create a pulldown menu with CSS
5. Create a flexbox
6. Work with flex sizes
7. Explore flexbox layouts
8. Create a print style sheet
9. Work with page sizes
10. Add and remove page breaks



# Introducing Responsive Design

**Figure 5-1** Designing for mobile and desktop devices

User Experience	Mobile	Desktop
Page Content	Content should be short and to the point.	Content can be extensive, giving readers the opportunity to explore all facets of the topic.
Page Layout	Content should be laid out within a single column with no horizontal scrolling.	With a wider screen size, content can be more easily laid out in multiple columns.
Hypertext Links	Links need to be easily accessed via a touch interface.	Links can be activated more precisely using a cursor or mouse pointer.
Network Bandwidth	Sites tend to take longer to load over cellular networks and thus overall file size should be kept small.	Sites are quickly accessed over high-speed networks, which can more easily handle large file sizes.
Lighting	Pages need to be easily visible in outdoor lighting through the use of contrasting colors.	Pages are typically viewed in an office setting, allowing a broader color palette.
Device Tools	Mobile sites often need access to devices such as phone dialing, messaging, mapping, and built-in cameras and video.	Sites rarely have need to access desktop devices.

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# Introducing Media Queries (continued)

`media="devices"` (attribute of **link** or **style** elements)

**Figure 5-3** Media types

Media Type	Used For
all	All output devices (the default)
braille	Braille tactile feedback devices
embossed	Paged Braille printers
handheld	Mobile devices with small screens and limited bandwidth
print	Printers
projection	Projectors
screen	Computer screens
speech	Speech and sound synthesizers, and aural browsers
tty	Fixed-width devices such as teletype machines and terminals
tv	Television-type devices with low resolution, color, and limited scrollability

# The @media Rule

```
@media devices {  
    style rules  
}
```





# Media Queries and Device Features

`media="devices and|or  
(feature:value) "`





# Media Queries and Device Features

**Figure 5-4** Media features

Feature	Description
<code>aspect-ratio</code>	The ratio of the width of the display area to its height
<code>color</code>	The number of bits per color component of the output device; if the device does not support color, the value is 0
<code>color-index</code>	The number of colors supported by the output device
<code>device-aspect-ratio</code>	The ratio of the <code>device-width</code> value to the <code>device-height</code> value
<code>device-height</code>	The height of the rendering surface of the output device
<code>device-width</code>	The width of the rendering surface of the output device
<code>height</code>	The height of the display area of the output device
<code>monochrome</code>	The number of bits per pixel in the device's monochrome frame buffer
<code>orientation</code>	The general description of the aspect ratio: equal to <code>portrait</code> when the height of the display area is greater than the width; equal to <code>landscape</code> otherwise
<code>resolution</code>	The resolution of the output device in pixels, expressed in either dpi (dots per inch) or dpcm (dots per centimeter)
<code>width</code>	The width of the display area of the output device

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# Applying Media Queries to a Style Sheet

**Figure 5-6** Creating media queries for different screen widths

media query matching  
screen devices with a  
maximum width of 480 pixels

media query matching  
screen devices with a  
minimum width of 481 pixels

media query matching  
screen devices with a  
minimum width 769 pixels

```
/* New Styles Added Below */

/* =====
   Mobile Styles: 0px to 480px
   ===== */
@media only screen and (max-width: 480px) {

}

/* =====
   Tablet Styles: 481px and greater
   ===== */
@media only screen and (min-width: 481px) {

}

/* =====
   Desktop Styles: 769px and greater
   ===== */
@media only screen and (min-width: 769px) {

}
```

# Exploring Viewports and Device Width

**Figure 5-8****Setting the properties of the viewport**

page does not automatically zoom out when the page is initially opened by the browser

sets the width of the layout viewport to the width of the device

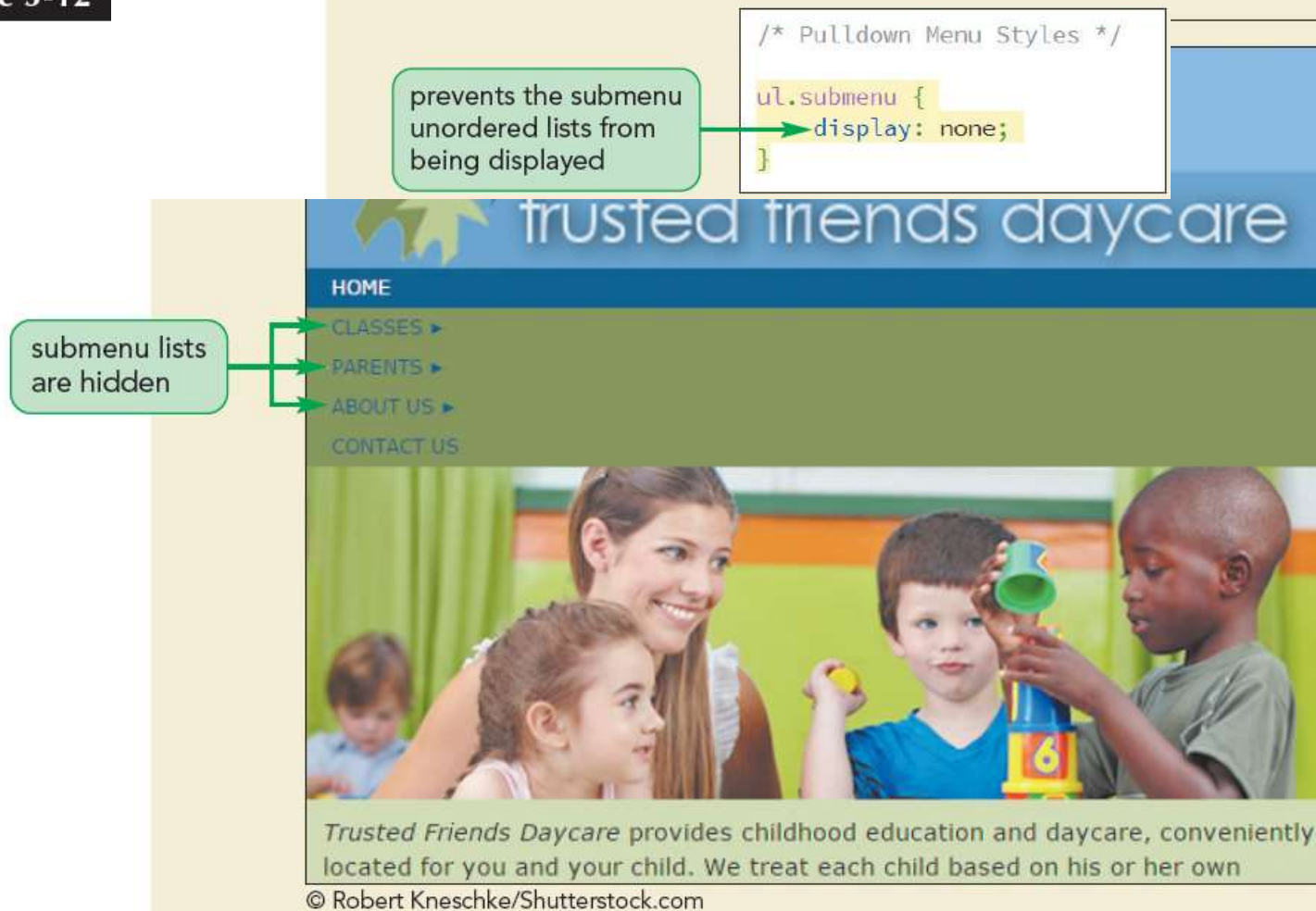
```
<title>Trusted Friends Daycare</title>
<meta charset="utf-8" />
<meta name="viewport" content="width=device-width, initial-scale=1" />
<link href="tf_reset.css" rel="stylesheet" />
<link href="tf_styles1.css" rel="stylesheet" />
</head>
```



# Creating a Pulldown Menu with CSS

Figure 5-11 Hiding the navigation list submenus

Figure 5-12



# Creating a Pulldown Menu with CSS

## *(continued 1)*

- ❑ `a.submenuTitle:hover+ul.submenu`
- ❑ `a.submenuTitle:hover+ul.submenu,`  
`ul.submenu:hover`



# Creating a Pulldown Menu with CSS

## *(continued 2)*

```
a.submenuTitle:hover+ul.submenu,  
ul.submenu:hover {  
    display: block;  
}
```





# Testing your Mobile Website - 1

**Figure 5-15** Popular device emulators

Mobile Emulators	Description
Android SDK	Software development kit for Android developers ( <a href="http://developer.android.com/sdk">developer.android.com/sdk</a> )
iOS SDK	Software development kit for iPhone, iPad, and other iOS devices ( <a href="http://developer.apple.com">developer.apple.com</a> )
Mobile Phone Emulator	Online emulation for a variety of mobile devices ( <a href="http://www.mobilephoneemulator.com">www.mobilephoneemulator.com</a> )
Mobile Test Me	Online emulation for a variety of mobile devices ( <a href="http://mobiletest.me">mobiletest.me</a> )
MobiOne Studio	Mobile emulator software for a variety of devices ( <a href="https://www.genuitec.com/products/mobile/">https://www.genuitec.com/products/mobile/</a> )
Opera Mobile SDK	Developer tools for the Opera Mobile browser ( <a href="http://www.opera.com/developer">www.opera.com/developer</a> )
Windows Phone SDK	Software development kit for developing apps and websites for the Windows Phone ( <a href="http://dev.windows.com/en-us/develop/download-phone-sdk">dev.windows.com/en-us/develop/download-phone-sdk</a> )

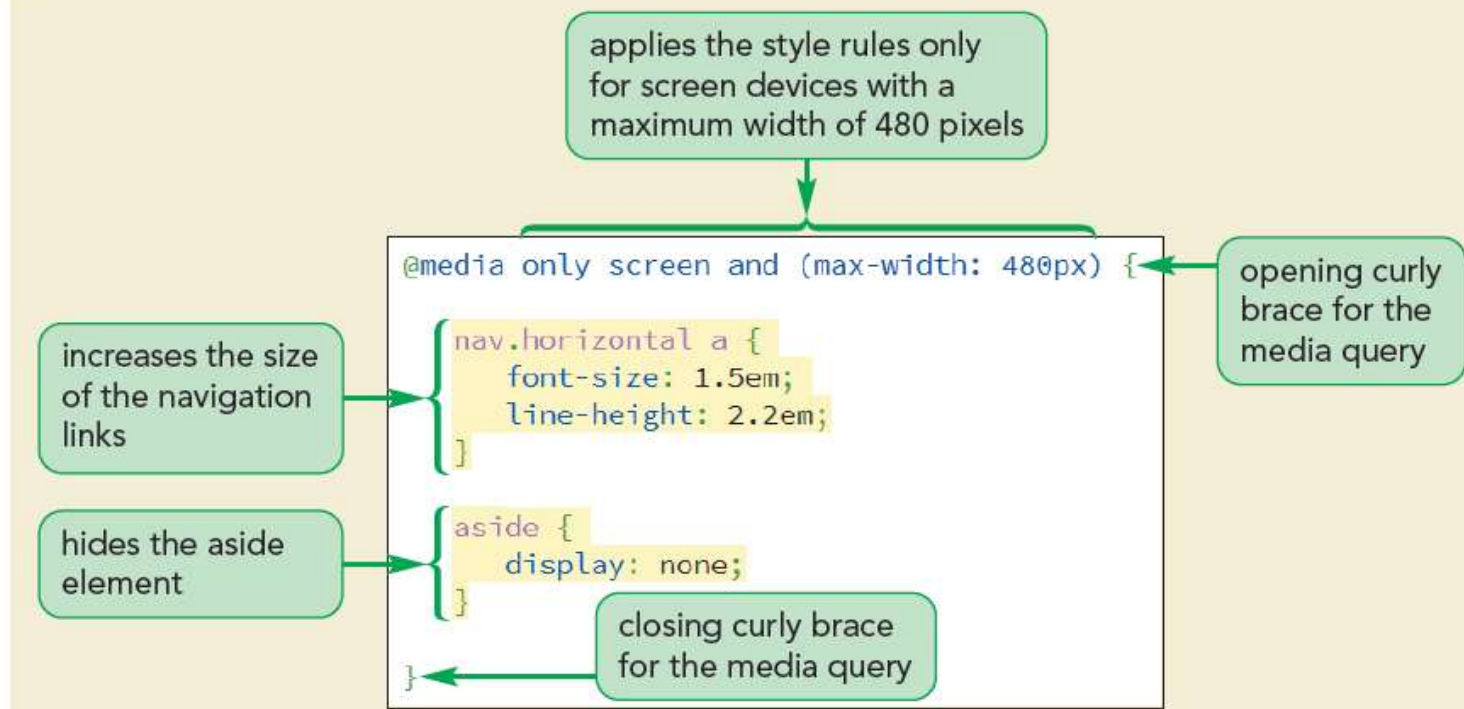
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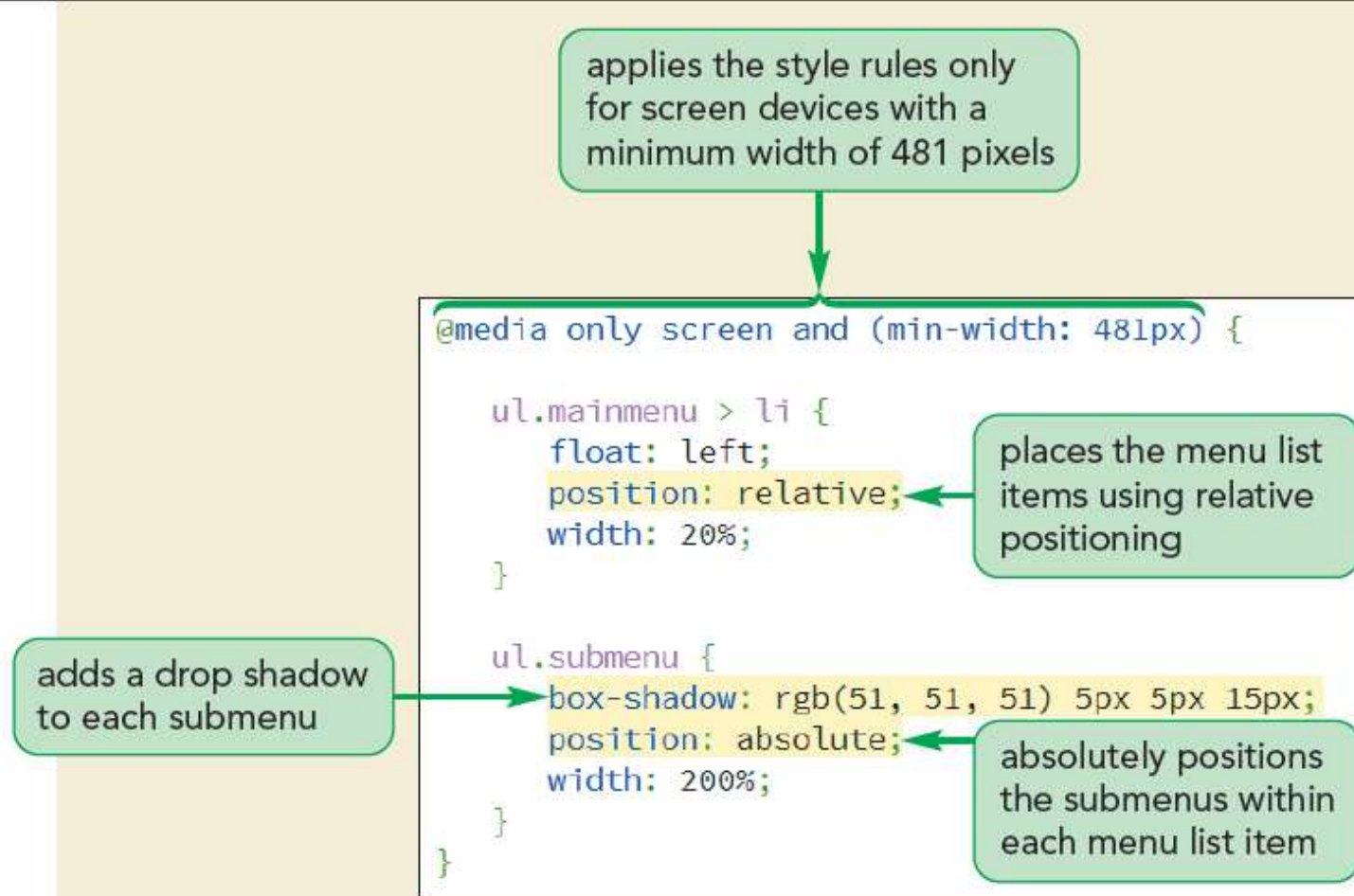
# Testing your Mobile Website - 2

**Figure 5-17** Hiding the aside element for mobile devices



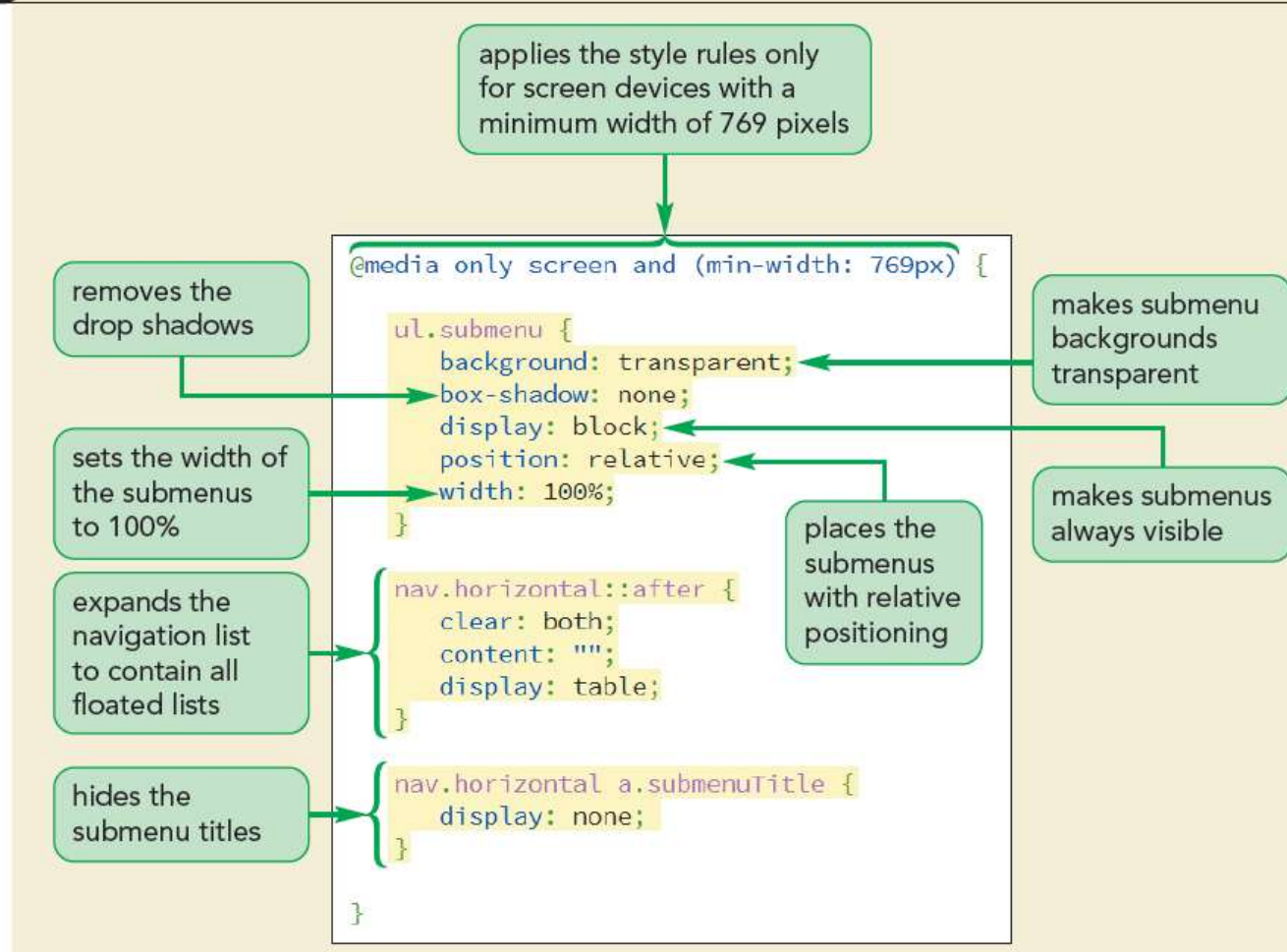
# Creating a Tablet Design

**Figure 5-21** Placing the pulldown menus with absolute positioning



# Creating a Desktop Design - 1

**Figure 5-23** Adding design styles for the browser background and page body



# Creating a Desktop Design - 2

**Figure 5-24** Styles for the article and aside elements

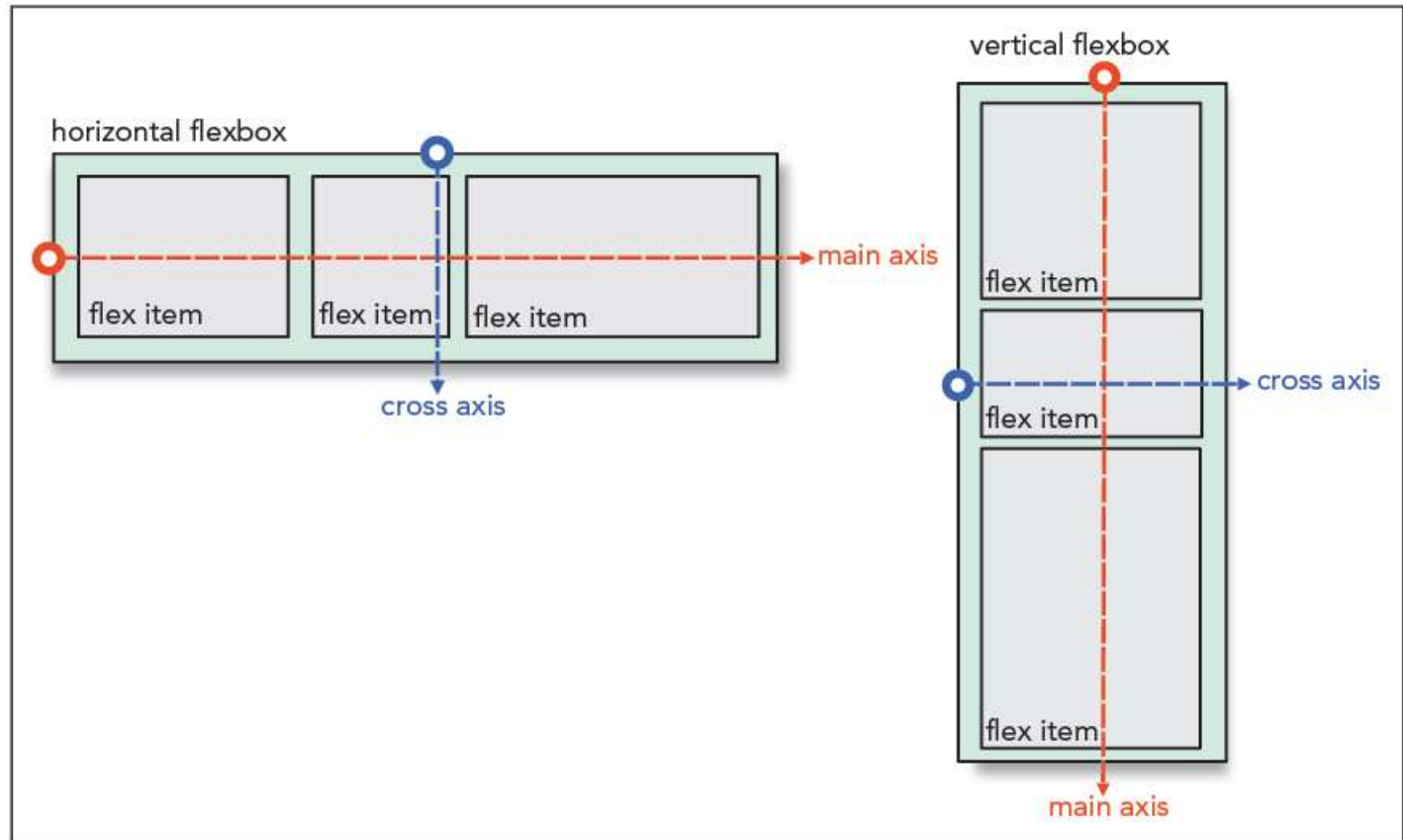
floats the main article  
with a width of 55% and  
a right margin of 5%

floats the aside element  
with a width of 40%

```
nav.horizontal a.submenuTitle {  
  display: none;  
}  
  
article {  
  float: left;  
  margin-right: 5%;  
  width: 55%;  
}  
  
aside {  
  float: left;  
  width: 40%;  
}
```

# Defining a Flexible Box - 1

**Figure 5-26** Horizontal and vertical flexboxes



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# Defining a Flexible Box - 2

```
display: flex;
```

OR

```
display: inline-flex;
```



# Cross-Browser Flexboxes

```
display: -webkit-box;
```

```
display: -moz-box;
```

```
display: -ms-flexbox;
```

```
display: -webkit-flex;
```

```
display: flex;
```





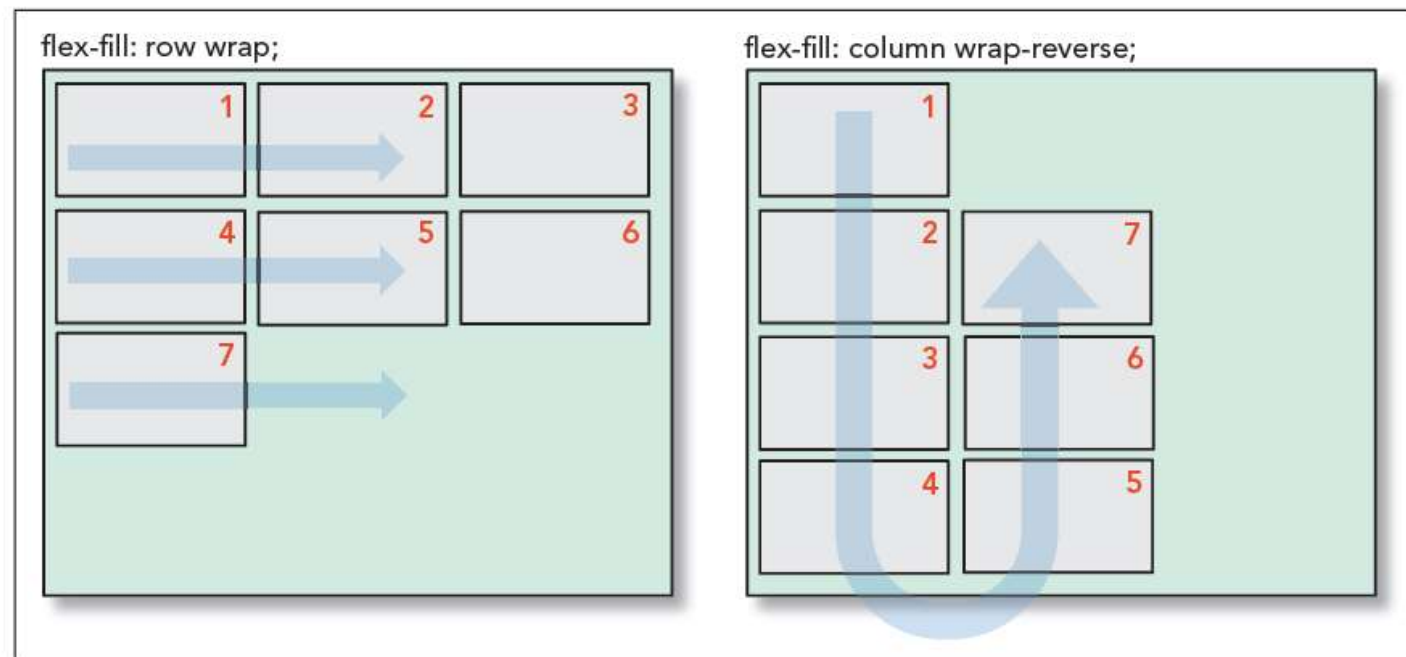
# Setting the Flexbox Flow - 1

```
flex-direction: direction;  
flex-wrap: type;
```



# Setting the Flexbox Flow - 2

Figure 5-27 Flexbox layouts



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# Setting the Flex Basis

```
flex-basis: size;
```

Example:

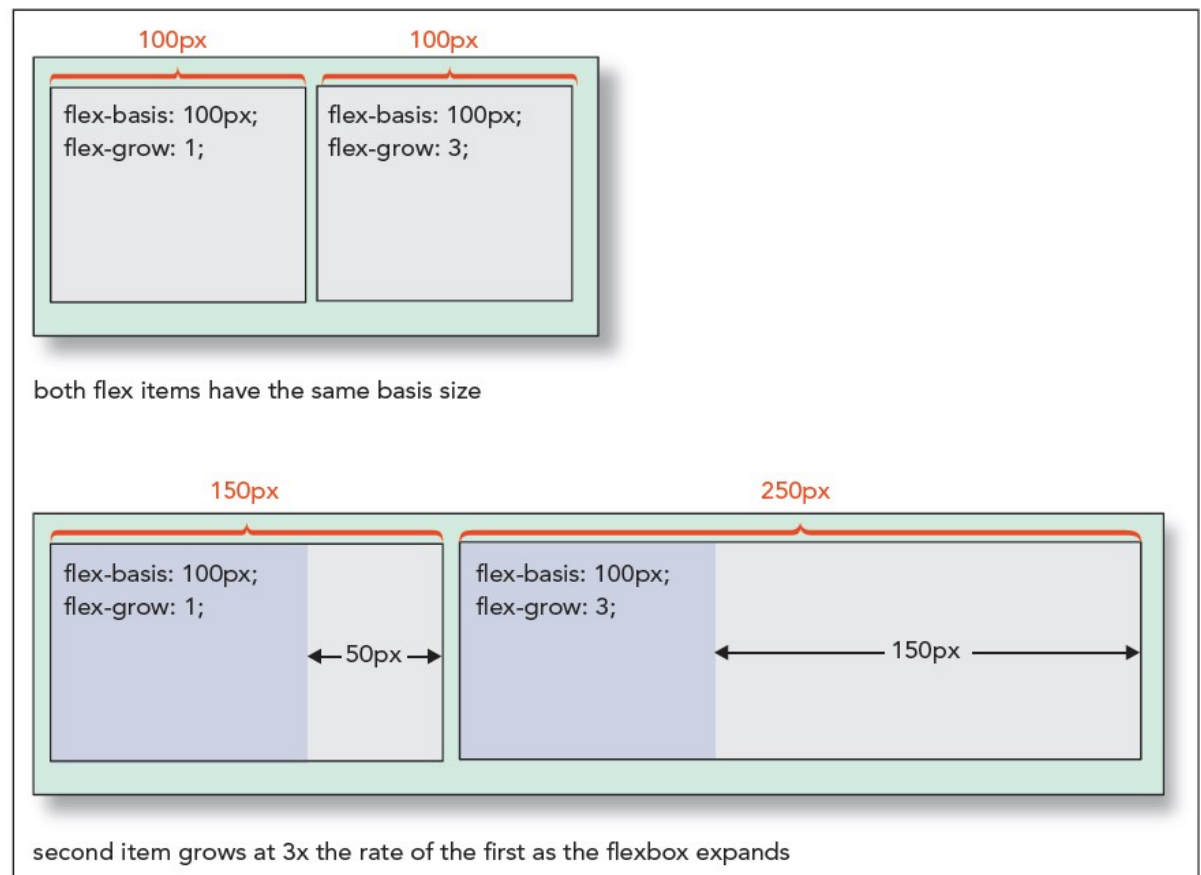
```
aside {  
    flex-basis: 200px;  
}
```



# Defining the Flex Growth

`flex-grow: value;`

**Figure 5-29** Growing flex items beyond their basis size



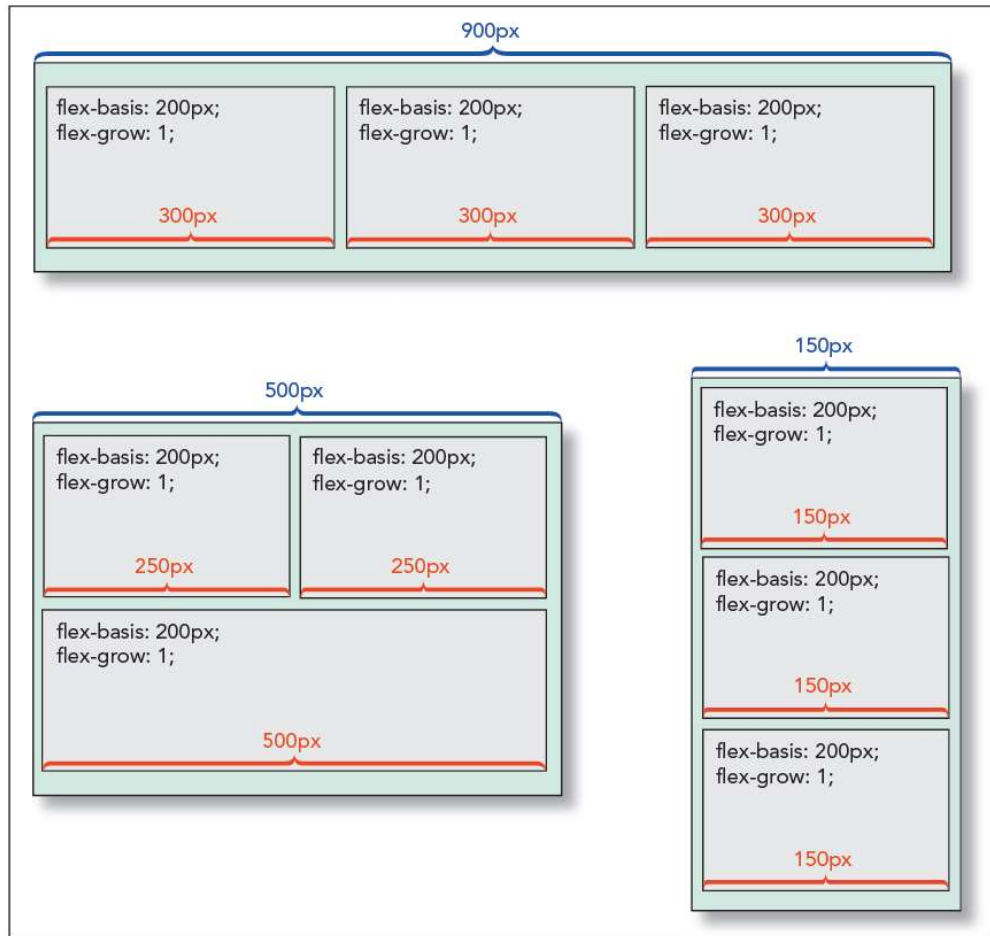
# Defining the Flex Growth (*continued*)

```
nav ul {  
    display: flex;  
}  
  
nav ul li {  
    flex-basis: 0px;  
    flex-grow: 1;  
}
```



# Defining the Shrink Rate

Figure 5-30 Shrinking flex items smaller than their basis size



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**`flex-shrink: value;`**

# The Flex Property

```
flex: grow shrink basis;
```

Default:

```
flex: 0 1 auto;
```





# Applying a Flexbox Layout

**Figure 5-32** Set the flex properties of the flex items in the page body

displays the header and footer at a width of 100%, occupying an entire row

sets the initial size of the aside element to 120 pixels and sets the growth and shrink factors to 1

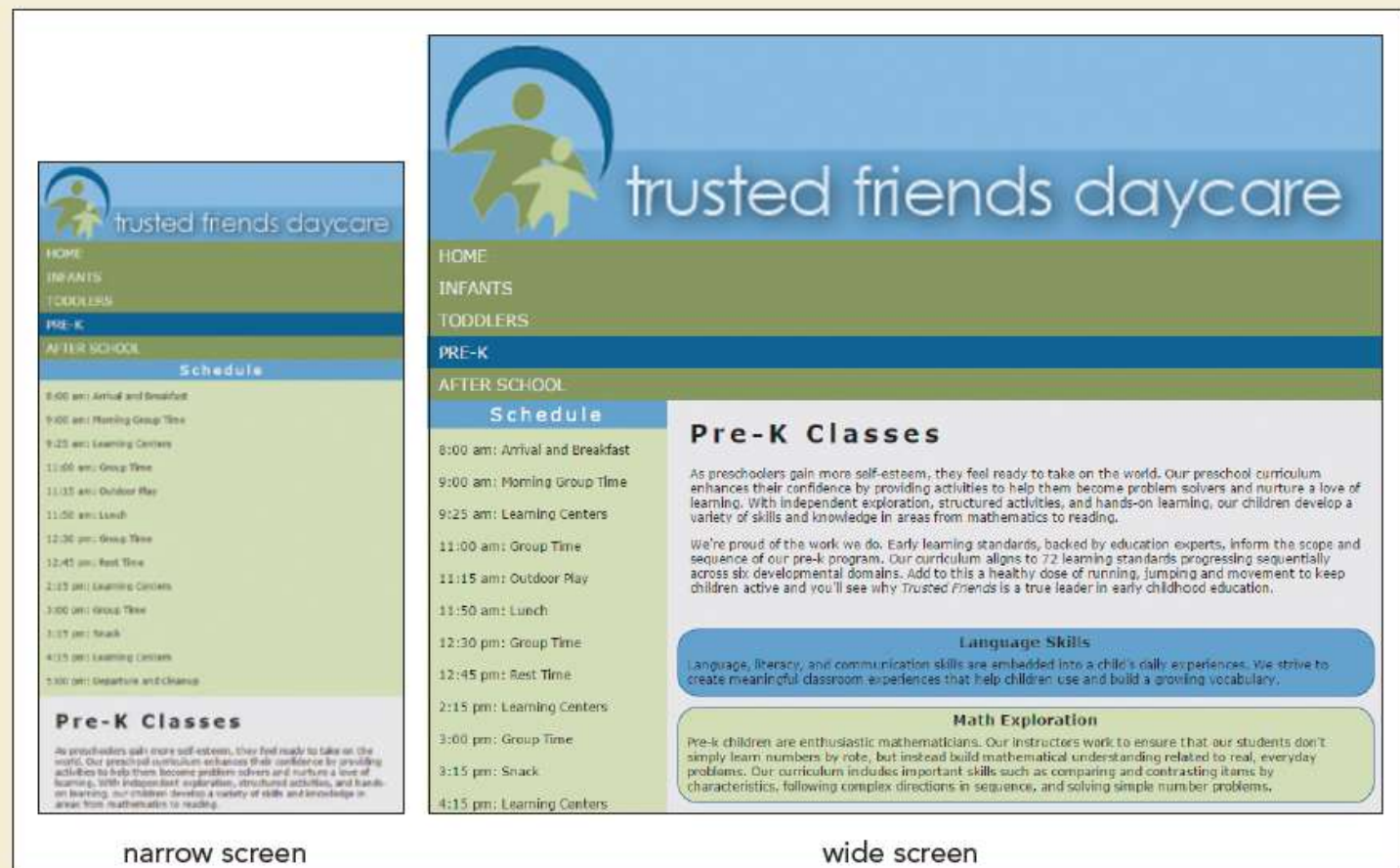
sets the initial size of the main section to 361 pixels and has it grow and shrink at a 3:1 ratio compared to the aside element

```
body {  
  display: -webkit-flex;  
  display: flex;  
  
  -webkit-flex-flow: row wrap;  
  flex-flow: row wrap;  
}  
  
header, footer {  
  width: 100%;  
}  
  
aside {  
  -webkit-flex: 1 1 120px;  
  flex: 1 1 120px;  
}  
  
section#main {  
  -webkit-flex: 3 1 361px;  
  flex: 3 1 361px;  
}
```



# Applying a Flexbox Layout (*continued*)

**Figure 5-33** Flex layout under different screen widths



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# Reordering Page Content with Flexboxes

**Figure 5-37** Setting the order of a flex item

```
/* =====  
Mobile Styles: 0 to 480px  
=====  
*/  
  
@media only screen and (max-width: 480px) {  
  
    aside {  
        -webkit-order: 99;  
        order: 99;  
    }  
  
    footer {  
        -webkit-order: 100;  
        order: 100;  
    }  
  
}
```

`order: value;`

# Aligning Items along the Main Axis

`justify-content: placement;`



# Aligning Flex Lines

```
align-content: value;
```



# Aligning Items along the Cross Axis

```
align-items: value;  
align-self: value;
```



# Creating a Navicon Menu

**Figure 5-41****Inserting the navicon**

```
<nav class="horizontal">
  <a id="navicon" href="#"></a>
  <ul>
    <li><a href="tf_home.html">Home</a></li>
    <li><a href="#">Infants</a></li>
    <li><a href="#">Toddlers</a></li>
    <li><a href="#" id="currentPage">Pre-K</a></li>
    <li><a href="#">After School</a></li>
  </ul>
</nav>
```

↑  
navicon image



# Designing for Printed Media

Figure 5-45 Style sheets for different devices

```
<title>Trusted Friends: Articles of Interest</title>  
<meta charset="utf-8" />  
<meta name="viewport" content="width=device-width, initial-scale=1" />  
<link href="tf_reset.css" rel="stylesheet" media="all" />  
<link href="tf_styles3.css" rel="stylesheet" media="screen" />  
<link href="tf_print.css" rel="stylesheet" media="print" />  
</head>
```

styles for all devices

styles for print  
devices

styles for screen  
devices

# Working with the @page Rule

```
@page {  
    style rules  
}
```



# Setting the Page Size

```
size: width height;
```



# Using the Page Pseudo-Classes

```
@page:pseudo-class {  
    style rules  
}
```



# Page Names and the Page Property

```
@page name {  
    style rules  
}
```

To assign a page name to an element, use

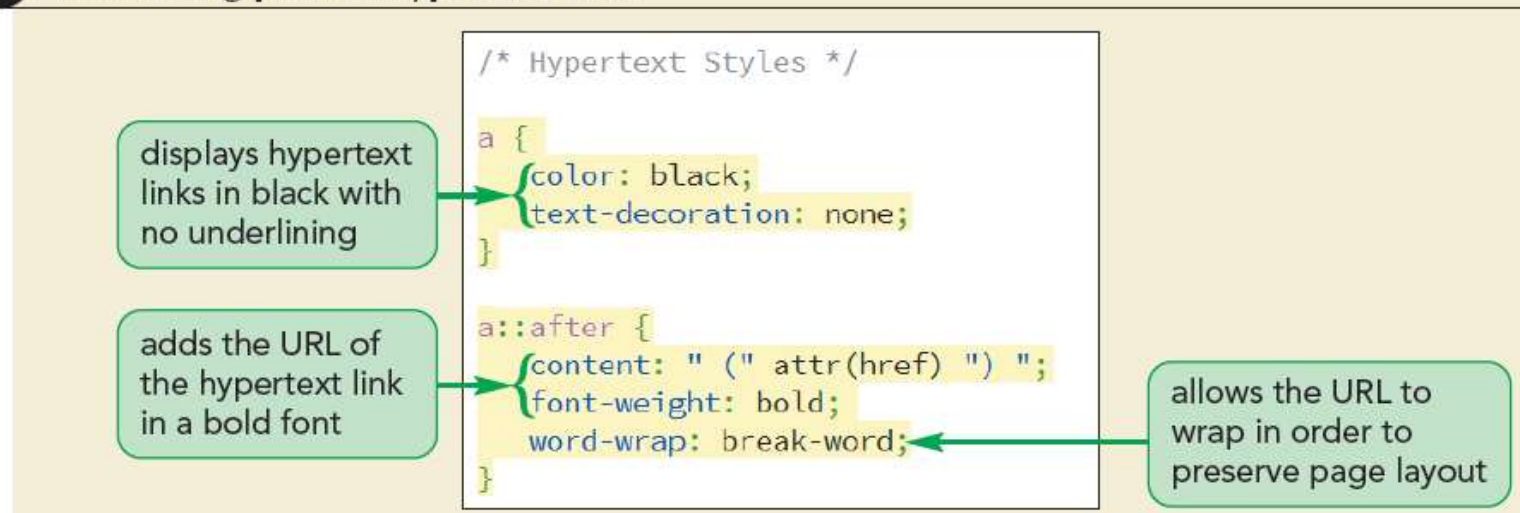
```
selector {  
    page: name;  
}
```



# Formatting Hypertext Links for Printing

```
a::after {  
    content: "(" attr(href) " ";  
}
```

**Figure 5-51** Formatting printed hypertext links



# Working with Page Breaks

```
page-break-before: type;  
page-break-after: type;
```



# Preventing Page Breaks

```
h1, h2, h3, h4, h5, h6 {  
    page-break-after: avoid;  
}
```





# Working with Widows and Orphans

```
widows: value;  
orphans: value;
```



# Topic Summary

*You will have mastered the material in this when they can:*

## ☐ Session 5.1

1. Create a media query
2. Work with the browser viewport
3. Apply a responsive design
4. Create a pulldown menu with CSS

## ☐ Session 5.2

1. Create a flexbox
2. Work with flex sizes
3. Explore flexbox layouts

## ☐ Session 5.3

1. Create a print style sheet
2. Work with page sizes
3. Add and remove page breaks



# The End of Lecture Slides

