

4.1 Using CSS in HTML

CSS (Cascading Style Sheets) is a textual language for describing how a web page is styled for visual presentation. Web browsers use CSS to determine how a web page is rendered on the screen, printed to paper, or presented via other media. The CSS acronym highlights the two main characteristics of presenting a web page:

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PARTICIPATION
ACTIVITY

4.1.1: Understanding the CSS acronym.

Cascading Style Sheet

The process of combining multiple style rules and resolving conflicts between those rules.

A language describing the visual presentation of structured documents.

Reset

The CSS language is a textual language written as a list of rules. A **CSS rule** consists of a selector, an opening curly brace ({), a declaration block, and then a closing curly brace (}). A CSS **selector** specifies the HTML elements to which the specific style rule apply. A **declaration block** contains one or more declarations separated by semicolons (;). A CSS styling **declaration** indicates what value is assigned to a styling property. Each declaration in the declaration block is applied to all elements matching the selector and consists of a styling property, a colon (:), and then the value for the property.

Style rules are specified inline in the **style** attribute for any HTML element, between <style> opening and closing tags, or in an external file. All style rules specified inline using the **style** attribute for an HTML element are applied to that element's content, including all contained elements. The selector and curly braces ({ and }) are not used when specifying inline styles. A web page links to an external CSS file by using a <link> tag and setting the **href** attribute to the URL of the CSS file, and setting the **rel** attribute to **stylesheet**. Many web pages can share an external CSS file, making consistent styling across many pages easy. An external CSS file contains a list of CSS rules.

PARTICIPATION

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ACTIVITY**4.1.2: Applying styles to HTML elements.****Animation captions:**

1. The default styling colors the text black.
2. The paragraph's general styling colors the text orange.
3. The specific style of the first paragraph colors the text red.
4. The specific style of the span colors text green.
5. The style of the second paragraph colors the text blue.

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Every browser has a default stylesheet that specifies styling for each HTML element. For example, the default style rules for `<h1>` elements typically specifies a bold-weighted font that is twice the normal size. Web pages can specify style rules to override the default presentation. The web browser applies any relevant CSS style rules to every HTML element and to all contained HTML elements.

More specific style rules override more general rules if they conflict. Ex: If general style rules for all paragraphs exists and a particular paragraph has a paragraph specific text style rule, the rules specific to that paragraph will override the more general rules when the rules compete.

**PARTICIPATION
ACTIVITY****4.1.3: Determine which style rules apply.**

Assume there is a general style rule that all paragraphs should be displayed using blue text.

- 1) `<p>George Washington was the first president of the United States.</p>`



Will the paragraph be displayed using blue text?

- Yes
- No

- 2) `<p style="color:green">George Washington was president from 1789 until 1797.</p>`



Will the paragraph be displayed using blue text?

- Yes
- No

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When no specific rules are given for an element, the style rules from the parent element cascade down and are applied to that element, a concept called inheritance. Each element inherits the

style rules from the element's parent. That parent in turn inherits style rules from the parent's parent element, and so on up to the top-level <body> HTML element.

**PARTICIPATION
ACTIVITY**
4.1.4: Determine which cascading style rules apply.


- 1) Assume there is a rule that all text in the document <body> should be displayed using black text.

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```
<html>
<head>
<title>White House History</title>
<style>
body {
    color: black;
}
</style>
<body>
<p>George Washington never lived in
the White House construction was
completed several years after he
retired from the presidency.</p>
</body>
```

Will the paragraph be displayed using black text?

- Yes
- No

- 2) Assume there is a style rule that all text in the body should be black, and there is a style rule that all paragraphs should be blue.



```
<html>
<head>
<title>White House History</title>
<style>
body {
    color: black;
}
p {
    color: blue;
}
</style>
<body>
<p>George Washington never lived in
the White House because construction
was completed after he retired from
the presidency.</p>
</body>
```

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Will the paragraph be displayed using black text?

- Yes

No

Note on semicolons.

Semicolons are only required to separate rule declarations. A common error is to forget the separating semicolon when adding a new declaration to a declaration block. Good practice is to place each declaration on a separate line and to add a semicolon to the end of each rule—even when a semicolon is not required—so that adding the semicolon is not forgotten later when another declaration is added.

PARTICIPATION ACTIVITY

4.1.5: Valid CSS.



1) `h1 {
 color: black;
}`

- Valid
- Invalid

2) `p {
 background-color = blue;
}`

- Valid
- Invalid

3) `span { font-weight: bold; font-size:
2em; }`

- Valid
- Invalid

4) `div {
 font-family: serif
}`

- Valid
- Invalid

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PARTICIPATION ACTIVITY

4.1.6: Applying CSS rules.



Given the following HTML and CSS files, indicate which color the web browser will use to display each word.

hello.html:

```
<html>
<head>
<link href="hello.css" rel="stylesheet">
<style>
p {
  color: black;
}
</style>
<title>A Sample CSS Page</title>
</head>
<body>
<p>Hello, <span style="color: green">World</span>!</p>
<p style="color: inherit">Good day</p>
</body>
</html>
```

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hello.css:

```
body {
  color: red;
}
```

green black red

Hello

World

Good

Reset

CHALLENGE
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4.1.1: Writing CSS rules.

Start

Using a `<style>` tag, set the color to green for all `<p>` tags. **SHOW EXPECTED**

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```
1 | <!-- Your solution goes here -->
2 |
3 | <p>Paragraph 1 content</p>
4 | <p>Paragraph 2 content</p>
5 | <p>Paragraph 3 content</p>
```

1

2

3

4

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5

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4.2 Basic selectors

CSS has many ways to specify the selector. Five common selector types are:

1. The **element selector** matches elements with the specified element names.
Ex: `p { color: blue; }` selects all `p` elements.
2. The **class name selector**, specified with a period character followed by the class name, matches elements that have the specified class name.
Ex: `.notice { color: blue; }` selects all elements with a `notice` class attribute.
3. The **ID name selector**, specified with a hash character followed by the ID name, matches the element that has the specified ID.
Ex: `#byLine { color: blue; }` selects the element with the `byLine` ID attribute.
4. The **descendant selector**, specified with a selector followed by a space and another selector, matches elements that are contained in other elements.
Ex: `h2 em { color: blue; }` selects `em` elements contained in `h2` elements.
5. The **pseudo-class selector**, specified with a colon character followed by a pseudo-class name, matches elements based on user behavior or element metainformation.
Ex: `:hover { color: blue; }` selects elements under the mouse cursor.

HTML class names allow CSS rules and JavaScript code to modify all HTML elements belonging to a class. An HTML tag's **class attribute** specifies the classes to which the tag belongs, with each class name separated by a space. Ex: `` has two classes, `highlight` and `first`. While HTML elements' ID names are unique, many elements may use the same HTML class name.

**PARTICIPATION
ACTIVITY****4.2.1: Applying styles to HTML elements.****Animation captions:**

1. The default styling colors the text black with a white background.
2. The element selector p matches all paragraph elements and colors the text blue.
3. The class selector p.gr matches the paragraphs with gr class attribute and colors the text green.
4. The ID selector p#second matches the paragraph with second ID attribute and colors the text orange.
5. The descendant selector p span matches span elements contained in a paragraph and colors the text red.
6. The pseudo-class selector p:hover matches the paragraph under the hovering cursor and colors the background yellow.

**PARTICIPATION
ACTIVITY****4.2.2: Basic selectors.**

Refer to the following HTML fragment.

```
<ol class="numbers">
  <li id="first">First number</li>
  <li id="second">Second number</li>
  <li id="third">Third number</li>
</ol>
<ul class="bullets">
  <li>A <span class="bullet">bullet</span></li>
  <li>Another <span class="bullet">bullet</span></li>
  <li>Last <span class="bullet">bullet</span></li>
</ul>
```

- 1) What CSS selector matches all the li elements?

Check**Show answer**

- 2) What CSS selector matches the numbers class attribute?

Check**Show answer**

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- 3) What CSS selector matches the span elements contained in ul elements?



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4.2.3: Descendant matching.



Assume the CSS below applies to each of the following.

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```
p span {
  background-color: yellow;
}
```

1) Will "text" appear highlighted?



<p>The text is highlighted.</p>

- Yes
- No

2) Will "text" in the first li element appear highlighted?



```
<ol>
  <li>The <span>text</span> is highlighted.</li>
  <li>The text is not highlighted.
</li>
</ol>
```

- Yes
- No

3) Will "text" appear highlighted?



<p>text</p>

- Yes
- No

4) Will "text" appear highlighted in both span elements?



```
<p>
  <span>text</span>
  <span><em>text</em></span>
</p>
```

- Yes
- No

5) Will "text" appear highlighted?



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<p>text</p>

- Yes
- No

Selectors can combine to match more specific elements. Ex: `.highlight` matches elements that have the class attribute `highlight`, `span` matches any span element, but `span.highlight` matches only span elements that have the `highlight` class attribute.

Pseudo-class selectors match elements based on user behavior or metainformation about HTML elements, including whether an element is enabled (`:enabled`), whether the mouse is hovering over an element (`:hover`), whether the element has no child elements (`:empty`), or whether the element contains text in a specified language (`:lang(language)`).

PARTICIPATION ACTIVITY

4.2.4: Basic CSS selector matching.

`figure img`

`img:last-child`

`img`

`img.red`

`img#lincolnPortrait`

Matches all `img` elements.

Matches `img` elements with `red` class name.

Matches the `img` element with `lincolnPortrait` ID.

Matches any `img` element that is the last child of another element.

Matches `img` elements contained in a `figure` element.

PARTICIPATION ACTIVITY

4.2.5: Practice identifying CSS selectors.

Choose the selector name that correctly matches the CSS selector used.



1) `td {
background-color: yellow;
}`

- Tag name
- Class name
- Id name
- Pseudo-class
- Descendant

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2) `td img {
background-color: yellow;
}`

- Tag name
- Class name
- ID name
- Pseudo-class
- Descendant



3) `.hidden {
background-color: yellow;
}`

- Tag name
- Class name
- ID name
- Pseudo-class
- Descendant

PARTICIPATION ACTIVITY

4.2.6: Practice using CSS selectors.



Complete the selector for each CSS rule.

- 1) Cause all heading 1 text to be displayed with the bold font-weight attribute.

```
font-weight: bold;
```

```
}
```

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Check [Show answer](#)



- 2) Cause all hypertext links inside a table to be displayed with the bold font-weight attribute.

```
 {
```

```
font-weight: bold;
```

```
}
```

[Check](#)
[Show answer](#)

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- 3) Cause all elements with the class name logbase to be displayed as subscripted text.

```
 {
```

```
vertical-align: super;
```

```
font-size: smaller;
```

```
}
```

[Check](#)
[Show answer](#)


- 4) Cause the element with the ID name special to be displayed with the text color red.

```
 {
```

```
color: red;
```

```
}
```

[Check](#)
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- 5) Cause the text background of any div to be changed to light blue when the mouse **hovers** (moves over) any part of the div contents.

```
 {
```

```
background-color: lightblue;
```

```
}
```

[Show answer](#)

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4.2.7: CSS selector using tag name, class name, and ID name.



Modify or add one CSS rule for each requirement below using selectors as specified.

1. By tag name: change the text **color** from **green** to **blue** for the **list items**.
2. By class name: set the **text-decoration** to **underline** for all **HTML elements** with the **class name footnote**.
3. By ID name: set the text **color** to **orange** and the **font-style** to **italic** for the **HTML element** with the **ID name footnote-1**.

HTML	CSS
-------------	------------

```
1 <section>
2   <h2>Facts about CSS</h2>
3   <ul>
4     <li>According to Wikipedia, CSS was first proposed by Håkon Wium Lie on October 1994.
5     <li>The first W3C CSS Recommendation (CSS1) was released in 1996.</li>
6     <li>CSS was selected over competing stylesheet technologies because CSS
7       <cite>allowed a document's style to be influenced by multiple style sheets by way of external style sheets.</cite>
8       <a href="#footnote-1">[1]</a></li>
9     <li>Four year passed from when CSS1 was released before any browser fully supported it.
10    <a href="#footnote-2">[2]</a></li>
11  </ul>
12  <p id="footnote-1" class="footnote">[1] <a href="https://en.wikipedia.org/wiki/Cascading_Style_Sheets">Cascading Style Sheets</a></p>
13  </p>
14  <p id="footnote-2" class="footnote">[2] <a href="https://en.wikipedia.org/wiki/Cascading_Style_Sheets">Cascading Style Sheets</a></p>
15  </p>
16 </section>
```

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Your web page

Expected web page

Facts about CSS

- According to Wikipedia, CSS was first proposed by Håkon Wium Lie on October 10, 1994. [1]
- The first W3C CSS Recommendation (CSS1) was released in 1996.
- CSS was selected over competing stylesheet technologies because CSS *allowed a document's style to be influenced by multiple style sheets by way of "cascading"*. [1]
- Four year passed from when CSS1 was released before any browser fully supported CSS1. [2]

Facts about CSS

- According to Wikipedia, CSS was first proposed by Håkon Wium Lie on October 10, 1994. [1]
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- CSS was selected over competing stylesheet technologies because CSS *allowed a document's style to be influenced by multiple style sheets by way of "cascading"*. [1]
- Four year passed from when CSS1 was released before any browser fully supported CSS1. [2]

PARTICIPATION
ACTIVITY

4.2.8: CSS selector using pseudo-class and descendant.



Add one CSS rule for each requirement below using selectors as specified.

- By pseudo-class: set the `background-color` to `pink` for any button that is `:disabled`.
- By descendant: set the `background-color` to `lightgreen` if the button is a descendant of a `fieldset`.

[HTML](#) [CSS](#)

```

1 <section>
2   <h2>Muppet Town Mayoral Elections</h2>
3   <p>
4     Muppet Town has decided that the town needs a mayor. Miss Piggy instantly nominated
5     Kermit—over his objections—also ended up on the ballot.
6   </p>
7   <p>
8     Kermit is not receiving any votes. He thinks that the ballot looks strange and sus-
9     picious because nothing appears to happen when other muppets try voting for him.
10  </p>
11  <fieldset><label>Mayoral Ballot</label>
12    <button>Vote for Miss Piggy</button>
13  </fieldset>
14  <button disabled="true">Vote for Kermit The Frog</button>
15 </section>
```

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Muppet Town Mayoral Elections

Muppet Town has decided that the town needs a mayor. Miss Piggy instantly nominated herself. Kermit—over his objections—also ended up on the ballot.

Kermit is not receiving any votes. He thinks that the ballot looks strange and suspects foul play, because nothing appears to happen when other muppets try voting for him.

[Mayoral Ballot](#) [Vote for Miss Piggy](#)

Expected web page

Muppet Town Mayoral Elections

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Muppet Town has decided that the town needs a mayor. Miss Piggy instantly nominated herself. Kermit—over his objections—also ended up on the ballot.

Kermit is not receiving any votes. He thinks that the ballot looks strange and suspects foul play, because nothing appears to happen when other muppets try voting for him.

[Mayoral Ballot](#) [Vote for Miss Piggy](#)

CHALLENGE ACTIVITY

4.2.1: Basic selectors.

Start

Set background-color to gold for all elements with class: subtle **SHOW EXPECTED**

[CSS](#) [HTML](#)

```
1 /* Your solution goes here */
2
3
```

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Exploring further:

- [CSS Selectors Reference](#) from W3Schools.
- [CSS Pseudo-classes](#) from W3Schools.
- [CSS Attribute Selectors](#) from W3Schools.

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4.3 Advanced selectors

Universal selector

The **universal selector**, specified using an asterisk character (*), matches *all* elements in the web page. The universal selector is implied when a tag name is not specified. Ex: the CSS selectors `.highlight` and `*.highlight` match exactly the same elements, where the universal selector is implied in `.highlight` and explicit in `*.highlight`.

Multiple selector

The **multiple selector**, specified using a comma (,) to separate selectors, matches all listed elements to apply a style rule. Ex: The figure below shows two CSS examples that apply the same styles to `ol` and `ul` elements. The CSS on the left unnecessarily duplicates the styling declarations `ol` and `ul` elements, whereas the CSS on the right uses a single style declaration using a multiple selector.

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Figure 4.3.1: Comparing separate and multiple selectors.

Separate selectors	Multiple selector

```
ul {
    background-color: gray;
    color: white;
    font-weight: bold;
}
ol {
    background-color: gray;
    color: white;
    font-weight: bold;
}
```

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Child selector

The **child selector**, specified using a greater than character (>) between two selectors, matches any elements where the second element is a direct child of the first element. The child selector is similar to the descendant selector (space between selectors), but the matching child element in the child selector must be a direct descendant of the matching parent element.

PARTICIPATION
ACTIVITY

4.3.1: Styling background color and image.



Animation captions:

1. The em elements are direct children of the paragraph element, so the descendant selector matches.
2. The "Neo" em element is a direct child of the strong element and a descendant of the paragraph. So, the descendant selector still matches.
3. A p > em child selector matches the "One" em element but not the "Neo" em element.

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4.3.2: List Item Selectors.



Match the CSS selectors to the best descriptions.

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ol > li li ol li

Match all list items.

Match all list items that are descendants of ordered lists.

Match all list items that are direct children of ordered lists.

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PARTICIPATION ACTIVITY

4.3.3: Matching specific elements.



Refer to the HTML below.

<p>James Bond is known to drive the Aston Martin DB5. Below are a few cars James Bond has driven in recent Bond films according to Wikipedia.</p>

```
<ol>
  <li><cite>Casino Royale</cite> (2006)
    <ul>
      <li><span class="mfg">Bentley</span> 4.5 Litre</li>
      <li><span class="mfg">Aston Martin</span> DB5</li>
    </ul>
  </li>
  <li><cite>Quantum of Solace</cite> (2008)
    <ul>
      <li><span class="mfg">Aston Martin</span> DBS V12</li>
    </ul>
  </li>
  <li><cite>Skyfall</cite> (2012)
    <ul>
      <li><span class="mfg">Jaguar</span> XJ (X351)</li>
      <li><span class="mfg">Mercedes</span> S400</li>
      <li><span class="mfg">Aston Martin</span> DB5</li>
    </ul>
  </li>
  <li><cite>Spectre</cite> (2015)
    <ul>
      <li><span class="mfg">Aston Martin</span> DB10</li>
    </ul>
  </li>
</ol>
```

- 1) What CSS selector matches all list items?

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- 2) What selector matches list items of ordered lists but not unordered lists?

Check

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- 3) What selector matches *all* elements with the `mfg` class attribute?

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- 4) What selector matches ordered and unordered lists?

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- 5) What selector matches cite, span, and a elements?

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4.3.4: Child and multiple selectors.



Modify or add a CSS rule for each requirement below to change the `background-color` property as specified.

1. Add a rule to change the background color for `ul` elements to be **magenta**.
2. Modify the `ol li` selector so the yellow background color applies only to `li` elements that are direct children of `ol` elements.
3. Add a rule to change the background color to **cyan** for `span` elements that are descendants of `ol` elements.
4. Add a rule to change the background color to **cyan** for `span` elements that are descendants of `ul` elements.
5. Combine the previous two rules into a single rule using a multiple selector.

[HTML](#) [CSS](#)

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```

1 <ol>
2 <li>The <em><span>Muppets</span></em> were created in 1955.</li>
3 <li>The first two <span><em>Muppets</em></span> performers were married.<ul>
4   <li>Jim <span>Henson</span></li>
5   <li>Jane <span>Henson</span></li>
6 </ul></li>
7 <li>The <span>Muppets</span> were also in comic strips and movies.</li>
8 </ol>
9
10 <ul>                               ©zyBooks 03/01/19 00:04 458368
11 <li>The <em><span>Muppets</span></em> were created in 1955.</li> jingya xun
12 </ul>                               SANDIEGOCOMP494GappySpring2019
13
14 <p>Every <span>"Muppets"</span> and <span>"Henson"</span> word is colored cyan except in this sentence.

```

[Render web page](#)[Reset code](#)**Your web page**

1. The *Muppets* were created in 1955.
 2. The first two *Muppets* performers were married.
 - Jim Henson
 - Jane Henson
 3. The Muppets were also in comic strips and movies.
- The *Muppets* were created in 1955.
- Every "Muppets" and "Henson" word is colored cyan except in this sentence.

Expected web page

1. The *Muppets* were created in 1955.
 2. The first two *Muppets* performers were married.
 - Jim Henson
 - Jane Henson
 3. The Muppets were also in comic strips and movies.
- The *Muppets* were created in 1955.
- Every "Muppets" and "Henson" word is colored cyan except in this sentence.

Sibling selectors

Sibling elements are elements that share the same parent element. The **general sibling selector**, specified using a tilde character (~) between two selectors, matches the second element if the second element occurs after the first element and both elements are siblings. Any number of other elements can be placed between two general sibling elements. In the example below, the heading and the paragraphs are children of the section element. Consequently, the two paragraphs are both general siblings of the heading element.

Figure 4.3.2: General sibling selector.

HTML and CSS	Render
<pre> <style> h1 ~ p { border-top: 1px solid gray; } </style> <section> <h1>Classifieds</h1> <p>Dog for adoption. Call 555-1234.</p> <p>Guard dog wanted. Call 555-4321.</p> </section> </pre>	<h1>Classifieds</h1> <hr/> <p>Dog for sale. Call 555-1234.</p> <p>Guard dog wanted. Call 555-4321.</p>

The **adjacent sibling selector**, specified using a plus character (+) between two selectors, matches an element that immediately follows another element, where both elements have the same parent. Ex: The adjacent selector `h1 + p` in the figure below matches the first paragraph immediately following the h1 header element, where both the paragraph and heading are siblings on the section element.

Figure 4.3.3: Adjacent sibling selector.

HTML and CSS	Render
<pre> <style> h1 + p { border-top: 1px solid gray; } </style> <section> <h1>My Book Report</h1> <p>I thoroughly enjoyed this book. The story made me laugh and cry and jump for joy.</p> <p>I recommend this book to anyone who loves to read.</p> </section> </pre>	<h1>My Book Report</h1> <hr/> <p>I thoroughly enjoyed this book. The story made me laugh and cry and jump for joy.</p> <p>I recommend this book to anyone who loves to read.</p>

Combinators.

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Combinators are CSS selectors that match specific relationships between other selectors. The *descendant, child, adjacent sibling, and general sibling* selectors are all combinators.



Identify which CSS selector is used in each question.

1) li ~ img

- Universal selector
- Multiple selector
- Child selector
- General sibling selector
- Adjacent sibling selector

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2) * .hide

- Universal selector
- Multiple selector
- Child selector
- General sibling selector
- Adjacent sibling selector

3) h1 + p

- Universal selector
- Multiple selector
- Child selector
- General sibling selector
- Adjacent sibling selector

4) p > img

- Universal selector
- Multiple selector
- Child selector
- General sibling selector
- Adjacent sibling selector

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Attribute selector

The **attribute selector**, specified with an attribute name and optional value comparison enclosed in square brackets ([and]), matches elements with the specified attribute or the specified attribute and value. Ex: `a[target]` selector matches anchor elements with a target attribute specified. The attribute selector can be more specific by matching elements with attributes

having a specific value. Ex: `a[target="_blank"]` attribute selector matches anchor elements with a target attribute value of `_blank`.

Table 4.3.1: Common attribute selector comparators.

Comparator	Matches element when	CSS example	©zyBooks 03/01/19 00:04 458368 Matching examples jingya xun SANDIEGOCOMP494GappySpring2019
=	Attribute has exact value	<code>[target="_blank"]</code>	<code></code>
~=	Attribute contains whole word	<code>[alt~="sad"]</code>	<code><img src="sad.png" alt="a sad face"</code>
^=	Attribute begins with value	<code>[class^="nav"]</code>	<code><ul class="nav-level0"> <ul class="navigation item"></code>

Pseudo-element selector

The **pseudo element selector**, specified with two colon characters (`::`) followed by a pseudo-element, matches parts of elements. The pseudo-element selectors allow styles to apply to the first line or first letter of text of an element or to text that is selected by the user, or allow additional content to be inserted before or after an element.

Table 4.3.2: Common pseudo-element selectors.

Pseudo-element	Explanation	©zyBooks 00:04 458368 CSS example jingya xun SANDIEGOCOMP494GappySpring2019
<code>::first-line</code>	Match the first line of text in block-level element.	<code>p::first-line { color: red }</code>
<code>::first-letter</code>	Match the first letter of text in block-level element.	<code>p::first-letter { font-size:200% }</code>

::selection

Matches the text selected by user.

::selection { background: yellow }**PARTICIPATION ACTIVITY**

4.3.6: Attribute and pseudo-element selectors.

Complete the CSS attribute and pseudo-element selectors to implement the specified behavior.

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- 1) Set the text color for input buttons of type submit.

```
<button type="submit">Click when done</button>
```

```
button[ ] {  
    color: green;  
}
```

[Check](#)[Show answer](#)

- 2) Change the text color to green for any text that is currently selected using the mouse.

```
[ ] {  
    color: green;  
}
```

[Check](#)[Show answer](#)

- 3) Set the input area width for any text input elements to 300 pixels.

```
<input type="text" name="firstName">
```

```
input[ ] {  
    width: 300px;  
}
```

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[Check](#)[Show answer](#)



- 4) Set the text color to blue for any http links where the rel attribute contains `nofollow`.

```
<a rel="abstract nofollow"  
href="https://example.com">
```

```
a [ ] {  
    color: blue;  
}
```

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[Check](#)

[Show answer](#)

**CHALLENGE
ACTIVITY**

4.3.1: Advanced selectors.



Start

Use a multiple selector to apply the below rules to all `<p>` and `<a>` tags. **SHOW EXPECTED**

[CSS](#) [HTML](#)

```
1 /* Your solution goes here */ {  
2     color: coral;  
3 }
```

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1

2

3

4

[Check](#)

[Next](#)

Exploring further:

- [CSS selector reference](#) from W3 Consortium.

How was this section?



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4.4 Common properties

Common CSS properties

Common CSS properties used to control web page elements include:

- **color**: The color property changes the color of the element's content.
- **background**: The background properties changes the element's background to display as a solid color, slightly or fully transparent, a color gradient, or an image.
- **font**: The font properties changes the text's font name, size, weight, style, and variant.
- **float, clear**: The float property allows an element to float to the left or right so that text wraps around the element, while the clear property moves the element below any previous floating elements.
- **text-align**: The text-align property allows text to display left-aligned, right-aligned, centered, or justified.
- **display**: The display property controls the layout of the element on a web page, such as displaying as an inline element, a block element, or hiding the element.

Color property

The **color** CSS property changes the color of the text. The value of the color property is specified by a color value.

A color value is specified using a color name, RGB or RGBA values, hexadecimal values, or HSL or HSLA values. CSS also defines 140 color names, such as **White**, **Blue**, **Black**, **Gray**, **ForestGreen**, **Magenta**. Color names are not case sensitive, so **DarkGray** and **darkgray** are the same color.

- An **RGB color value** specifies a color using the `rgb(red, green, blue)` function by indicating the red, green, and blue intensities. Each intensity for red, green, and blue is between 0 and 255, where 0 is the lowest intensity and 255 is the highest.

Ex: `rgb(0, 0, 0)` is black, `rgb(0, 0, 255)` is blue, `rgb(255, 255, 0)` is yellow, and `rgb(255, 255, 255)` is white.

- A **hexadecimal color** specifies a color using the `#RRGGBB` format by indicating the red, green, and blue intensities. Each intensity for red, green, and blue is between 00 and ff hexadecimal numbers, where 00 is the lowest intensity and ff is the highest.
Ex: `#000000` is black, `#0000ff` is blue, `#ffff00` is yellow, and `#ffffff` is white.
- An **HSL color value** specifies a color using the `hsl(hue, saturation, lightness)` function by indicating the hue, saturation, and lightness values. The hue value ranges between 0 and 360, and the saturation and lightness values range between 0% and 100%.
Ex: `hsl(0, 0%, 0%)` is black, `hsl(120, 100%, 50%)` is green, and `hsl(0, 100%, 25%)` is dark red.

The HSL color specification method is harder to understand and is not used as frequently as the RGB and hexadecimal color specification methods.

- The RGB and HSL color values can add an alpha value to allow for transparency. The **RGBA color value** specifies a color using the `rgba(red, green, blue, alpha)` function by indicating the red, green, blue, and alpha intensities. The **HSLA color value** specifies a color using the `hsla(hue, saturation, lightness, alpha)` function by indicating the hue, saturation, lightness, and alpha intensities. The intensities have the same ranges as for RGB or HSL color values, but the alpha intensity is between 0 and 1. An alpha of 0 means fully transparent, 1 means fully opaque, and 0.5 means half transparent.

**PARTICIPATION
ACTIVITY**

4.4.1: Color values and names.



Match each color value to the color name.

`rgba(255, 255, 255, 0.5)` `rgb(144, 238, 144)` `#FFFFFF` `#FFD700` `rgb(0, 0, 0)`

`rgb(80, 80, 80)` `#0000FF` `#006400`

Blue

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Black

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White

DarkGreen

LightGreen

Gray

Gold

Semitransparent white

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PARTICIPATION
ACTIVITY

4.4.2: CSS text color.



Modify or add one CSS rule for each requirement below to change the text **color** property as specified.

1. By color name: change the text color for **byname** class elements from **black** to **blue**.
2. By RGB values: change the text color for **byrgb** class elements from black (**rgb(0, 0, 0)**) to green by modifying the second number to be 255.
3. By HSL values: change the text color for **byhsl** class elements from black (**hsl(0, 0%, 0%)**) to cyan by modifying the first number to be 200, the second number to 100%, and the third number to 50%.

[HTML](#) [CSS](#)

```
1 <p class="byname">The text is blue</p>
2
3 <p class="byrgb">The text is green</p>
4
5 <p class="byhsl">The text is cyan</p>
6
```

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Render web page

Reset code

Your web page

The text is blue
The text is green
The text is cyan

Expected web page

The text is blue
The text is green
The text is cyan

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Background properties

Every element in a web page has a set of background properties. The web browser first draws the element's background and then draws the element's content. If the element's background is not fully opaque, the element's parent will be visible under the element's content. Common background properties include:

- The **`background-color`** property specifies the background color.
- The **`background-image`** property specifies a background image.
- The **`background`** property is shorthand for setting several of the element's background properties at the same time.

Background colors are specified using color names, a color function (RGB, RGBA, HSL, HSLA), or one of the values such as `transparent`. Background images are specified with the `none` value or the `url('URL')` function, where URL indicates the location of the image. By default, the initial background color is `transparent` and background image is `none`, which means the element's parent's background will display underneath the element's content. When a background color and image are both specified, the background image is rendered on top of the color.

PARTICIPATION
ACTIVITY

4.4.3: Styling background color and image.

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Animation captions:

1. The elements display with transparent backgrounds.
2. The p element has a LightSkyBlue background color.

3. The div element uses an image for a background, and is displayed over the p element's background.

**PARTICIPATION
ACTIVITY**

4.4.4: Determining background properties.



Given the HTML below, indicate the background properties used for the elements. Assume that the smiley.gif image has a transparent background.

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```
<p>Below is the word "Hello" in different languages.</p>
<ul id="americas" style="background-color: #ffff00">
    <li id="hola" style="background-image: url('smiley.gif')">Hola</li>
    <li id="olá" style="background: green url('smiley.gif')">Olá</li>
</ul>
<ul id="europe" style="background-image: url('clouds.png');">
    <li id="salut" style="background: blue">Salut</li>
    <li id="hej" style="background: red url('smiley.gif')">Hej</li>
    <li id="bog" style="background: transparent url('smiley.gif')">Bog</li>
</ul>
```

smiley face on yellow blue smiley face on clouds smiley face on green

smiley face on red

Hola

Olá

Salut

Hej

Bog

Reset

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Font properties

Many CSS properties control the font properties for displaying text. CSS font properties include:

- The **font-family** property specifies the font family, such as "Times New Roman" or serif.

- The **font-size** property changes the font size, such as `120%`, `small`, or `12pt`.
- The **font-weight** property specifies the font weight, such as `normal` or `bold`.
- The **font-style** property changes the text style, such as `normal`, `italic`, or `oblique`.
- The **font-variant** property specifies the variant of the text, such as `normal` or `small-caps`.
- The **font** property is shorthand for setting several of the element's font properties at the same time.

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The font family property contains a list of fonts specified as a family name or a generic family separated by commas. A family name is the name of a specific font, like "Times New Roman", "Arial", or "Georgia". Family names containing spaces must be wrapped in quotations marks, while family names without spaces do not. A generic family is a more general group of fonts, like serif, sans-serif, cursive, fantasy, or monospace. The web browser will use the first font listed that is available. Good practice is to start the list with the intended font and end with a generic family.

Example 4.4.1: Generic family names.

Generic family	Distinguishing features	Example CSS	Displayed
Serif	"Embellishments" like finishing strokes or flare ends	<code>font-family: serif;</code>	Generic Family
Sans-Serif	Plain stroke ends	<code>font-family: sans-serif;</code>	Generic Family
Cursive	Cursive or calligraphy characteristics like joined strokes	<code>font-family: cursive;</code>	Generic Family
Fantasy	Decorative	<code>font-family: fantasy;</code>	Generic Family
Monospace	Constant width for letters, punctuation, and space	<code>font-family: monospace;</code>	Generic Family

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The font size can be specified using a predefined size name, a relative size name, a relative percentage, or a specific length. The predefined size names are `xx-small`, `x-small`, `small`, `medium`, `large`, `x-large`, and `xx-large`, where `medium` is the default size. The relative size names are `smaller` and `larger` which change the font size for an element to be smaller or larger than the font size of the parent element. The relative percentage changes the font size for an element to the specified percentage of the font size of the parent element. Ex:

font-size: 120%; specifies the font should be 120% times the parents element's font size, or 20% larger. The specific length changes the font size to be a size, which can be specified in pixels (px), centimeters (cm), points (pt), etc.

**PARTICIPATION
ACTIVITY**
4.4.5: Computing font properties.


Given the HTML below, answer the following questions regarding font properties.

```
<style>
p {
    font-family: "Verdana", "Arial", sans-serif;
    font-size: 10pt;
}
span#band {
    font-style: italic;
    font-size: 120%;
}
span#music {
    font-variant: small-caps;
}
</style>

<p>
My favorite band is <span id="band">The Shins</span>, because their <span
id="music">music</span> is thought provoking!
</p>
```

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- 1) What is the text size for the p element?

pt

Check**Show answer**

- 2) What is the text size for the span element with **band** id attribute?

pt

Check**Show answer**

- 3) What is the most preferred font for the p element?

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- 4) What is the second most preferred font for the p element?

Check**Show answer**



- 5) What is the third most preferred font for the p element?

[Check](#)[Show answer](#)

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- 6) What is the text variant for the span element with **music** id attribute?

[Check](#)[Show answer](#)

Float property

CSS properties float and clear control how text flows around HTML elements, making web pages look like a magazine or newspaper article where the article's text wraps around the images in the page.

- The **float** CSS property specifies whether the element will float to the right or left of the element's parent, allowing text to flow around the element.
- The **clear** property moves an element down to avoid previously floated elements on the left, right, or both sides.

PARTICIPATION ACTIVITY

4.4.6: Float property values.



Specify the correct CSS values.

- 1) What CSS style floats an element to the right?

float: ;

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- 2) What CSS style avoids left-floating elements?

clear: ;

[Check](#)[Show answer](#)



Modify the CSS below to float to the right the first image with **floatright** class, to float to the left the second image with **floatleft** class, and to clear floating elements on both sides of the p element with **nofloats** class.

HTML
CSS

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```

1 <h1>Classifieds</h1>
2
3 <p>
4 
10
11 <p class="nofloats">
12 
16
17 <p>
18 Call 555-4321 for more information.
19

```

[Render web page](#)[Reset code](#)**Your web page**

Classifieds



Adorable female cat available for adoption. We found Fluffy during a thunderstorm. She is house-trained and very cuddly. Call 555-1234.

**Expected web page**

Classifieds

Adorable female cat available for adoption. We found Fluffy during a thunderstorm. She is house-trained and very cuddly. Call 555-1234.



Looking for new home for puppy. Goes by the name "Bowser".



Text-align property

The **text-align** property changes the horizontal alignment of text for an element. Text is left aligned using the value **left**, right aligned with **right**, center aligned with **center**, or fully justified with **justify**. Spaces in justified text are stretched so each line of wrapped text fills the element. The text-align property also affects children elements that are inlined, such as **img** or **a** elements.

Table 4.4.1: Text alignment examples.

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Alignment	CSS example	Displayed
left	<code>text-align: left</code>	Example of wrapped text using the horizontal alignment CSS property.
right	<code>text-align: right</code>	Example of wrapped text using the horizontal alignment CSS property.
center	<code>text-align: center</code>	Example of wrapped text using the horizontal alignment CSS property.
justify	<code>text-align: justify</code>	Example of wrapped text using the horizontal alignment CSS property.

PARTICIPATION ACTIVITY**4.4.8: Text alignment.**

Provide the CSS value that correctly styles the example text as displayed.

1)

Gears and Pulleys
The untold story of power
transference.

text-align:

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Check**Show answer**

2)

The following sentences are examples of a pangram, a sentence that contains all of the letters of the alphabet. The quick brown fox



jumped over a lazy dog. Pack my box with five dozen liquor jugs. Jackdaws love my big sphinx of quartz. The five boxing wizards jump quickly. How vexingly quick daft zebras jump! Bright vixens jump; dozy fowl quack. Forsaking monastic tradition, twelve jovial friars gave up their vocation for a questionable existence on the flying trapeze.

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text-align:

[Check](#)

[Show answer](#)

3)

Due: July 4, 1776



text-align:

[Check](#)

[Show answer](#)

Display property

The **display** property controls the layout of the element on a web page. Values for the display property include:

- **inline** displays the element as an inline element, like **span** or **a** elements.
- **block** displays the element as a block element, like **p**, **h1**, or **div** elements.
- **none** hides the element from being displayed, like **style** elements.
- **inline-block** displays the contents of the element as a block element, but formats the element as an inline element.
- **list-item** displays the contents of the element as a list item element.

PARTICIPATION
ACTIVITY

4.4.9: Display CSS values.

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Provide the CSS display value that correctly styles the following HTML as displayed.

```
<style>
.animal {
    background: yellow;
    width: 50px;
    height: 40px;
    display: ...
}
</style>

My favorite breed of
cat
is Russian Blue.
```

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1)

My favorite breed of cat is Russian Blue.

display:

[Show answer](#)

My favorite breed of is Russian Blue.

display:

[Show answer](#)

3)

My favorite breed of
cat

is Russian Blue.

display:

[Show answer](#)

4)

My favorite breed of
cat

is Russian Blue.

display:

[Show answer](#)

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5)

My favorite breed of cat is

Russian Blue.

display:

[Show answer](#)[Check](#)

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CHALLENGE ACTIVITY

4.4.1: Common properties.



Start

For the `<p>` tag, set color to `rgb(100, 200, 250)`. **SHOW EXPECTED**[CSS](#)[HTML](#)

```
1 p {  
2  
3     /* Your solution goes here */  
4  
5 }
```

1

2

3

4

5

[Check](#)[Next](#)

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Exploring further:

- [HTML Color Names](#) from W3Schools.

- [CSS Legal Color Values](#) from W3Schools.
- [Color HSL](#) from W3Schools.
- [CSS Background Property](#) from W3Schools.
- [CSS Display Property](#) from W3Schools.

How was this section?



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4.5 Box model

HTML elements take up space on the webpage. The size of each element depends on the content and also the space around the content. The **box model** describes this space as nested boxes. The box model is useful and important to understand when considering design and layout.

- **Content:** The innermost box contains the content of the element, such as text and images.
- **Padding:** The padding box contains the content box and adds a transparent area around the content.
- **Border:** The border box contains the padded content and adds an optionally colored area around the padding.
- **Margin:** The margin box contains all three boxes and adds a transparent area around the border.

PARTICIPATION
ACTIVITY

4.5.1: Box model displayed.



Animation captions:

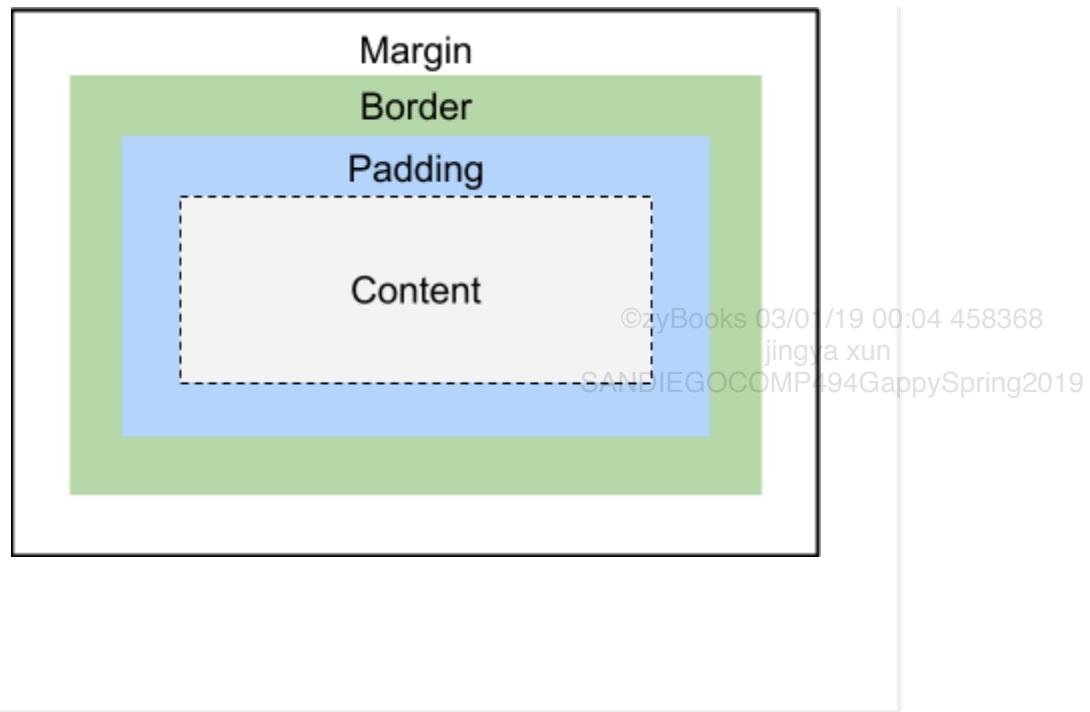
1. Box models describes the space each HTML element takes as a box. Each div element is displayed with a blue background, and each box is highlighted with a light blue outline.
2. Padding surrounds the content element with transparent space, which is displayed using the element's background color.
3. The border surrounds the content and padding and is colored black.
4. The margin surrounds the border with transparent space and separates the element from other elements.

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Figure 4.5.1: Box model with labeled boxes.



The **padding**, **border**, and **margin** CSS properties control the padding, border, and margin boxes. The padding and margin boxes are transparent, so the CSS padding and margin properties specify only the thickness. The border box can be colored and styled, so the CSS border property specifies the thickness, style, and color.

The boxes are rendered according to the following rules.

- The content is displayed with a background according to the element's background color.
- The padding is transparent and will be displayed using the same color as the element's background.
- The border can be either colored or transparent. If transparent, the border will be displayed with the same color as the padding.
- The margin is transparent and will be displayed using the background color of the parent element.

**PARTICIPATION
ACTIVITY**

4.5.2: Choose the correct display color.



Given the HTML and CSS below, choose which color each box will be displayed.

```
<style>
div {
  background: white;
  border: 2px solid blue;
}
span {
  background: yellow;
  border: 1px solid black;
  padding: 2px;
  margin: 2px;
}
</style>

<div>This is a <span>test</span> of the emergency broadcast system.</div>
```

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white black blue yellow

span element's padding

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span element's border jingya xun

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span's margin

div's border

Reset

Instead of applying the thickness uniformly around the box, each CSS property can apply only to one of the sides by adding a suffix (`-top`, `-left`, `-bottom`, `-right`) to the CSS property. Ex: `padding-top: 5px; padding-bottom: 10px` has 5 pixels of padding above and 10 pixels of padding below the content.

When an element has the `margin` property set to `auto`, the browser will compute the left and right margins to use up the remaining width of the parent element. The `auto` margin value is useful for horizontally centering an element in the parent element. A common error is to use `margin: auto` on elements that do not have the width specified or have `display: inline`, such as span elements.

**PARTICIPATION
ACTIVITY**

4.5.3: Compute the size.



- What is the total width of an element, where the content is 200 pixels wide, the padding is 10 pixels thick, the border is 2 pixels thick, and the margin is 5 pixels thick?

pixels



Check

[Show answer](#)

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- What is the total height of an element, where the content is 100 pixels high, the padding and border are 0 pixels thick, and the margin is 10 pixels thick?

pixels



[Check](#)[Show answer](#)

- 3) What is the total width of an element, where the content is 100 pixels wide, the left margin is 10 pixels, the right margin is 15 pixels, the padding is 5 pixels, and the border is 0 pixels thick?

 pixels

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The padding and margin thicknesses are specified with a width. Ex: **5px** defines a width of 5 pixels. Borders are specified with a width, a style, and a color. An element with a border style **none** renders the same as an element with a **0px** width border.

Table 4.5.1: Common border styles.

Style	CSS example	Displayed
solid	<code>border: 2px solid black;</code>	
dashed	<code>border: 2px dashed red;</code>	
dotted	<code>border: 2px dotted blue;</code>	
none	<code>border: 2px none green;</code>	
double	<code>border: 5px double gray;</code>	

PARTICIPATION ACTIVITY

4.5.4: Modify the padding, border, and margin.

Modify the CSS declarations for the span tag to meet each requirement below:

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1. Padding: 5 pixels left, and 5 pixels right.
2. Border: 2 pixels solid black above (use **-top** suffix), and 4 pixels solid gray below (use **-bottom**).
3. Margin: uniform 5 pixels around.

[HTML](#)
[CSS](#)

```

1 <p>
2   The typical filler text is the <span>Lorem Ipsum</span>.
3   According to lipsum.com, this text has been standard dummy text since the 1500s.
4 </p>

```

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Render web page

Reset code

Your web page

The typical filler text is the Lorem Ipsum.
According to lipsum.com, this text has been
standard dummy text since the 1500s.

Expected web page

The typical filler text is the Lorem Ipsum .
According to lipsum.com, this text has been
standard dummy text since the 1500s.

Vertical margins of two elements can sometimes combine or collapse into a single vertical space. Horizontal margins never collapse.

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Example 4.5.1: Collapsed margins.

The following HTML demonstrates a collapsed margin. Notice that the vertical space between the inner div elements is collapsed to 10 pixels, while the horizontal space between the span elements is 20 pixels.

HTML and CSS	Rendered webpage
--------------	------------------

```

<style>
  .outer {
    border: 2px dotted black;
  }
  .inner {
    margin: 10px;
    border: 1px solid gray;
  }
  span {
    margin: 10px;
    background: lightgray;
  }
</style>
<div class="outer">
<div class="inner"><span>First</span>
<span>element</span></div>
<div class="inner">Second element</div>
</div>

```

First element

Second element

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**PARTICIPATION
ACTIVITY**

4.5.5: Box model properties.



- 1) What CSS rule sets the margin to have a uniform space of 20 pixels?

Check**Show answer**

- 2) What CSS rule sets a blue, dashed border that has a uniform width of 5 pixels?

Check**Show answer**

- 3) What CSS rule changes the right padding to be 10 pixels wide?

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**CHALLENGE
ACTIVITY**

4.5.1: Box model.



Start

For the tag, set the border all around to be 3 pixels, dashed, and coral.

SHOW EXPECTED

CSS HTML

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```
1 span {  
2     /* Your solution goes here */  
3 }  
4  
5 }
```

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1

2

3

4

5

Check

Next

Exploring further:

- [Box model](#) from W3 Consortium.
- [Collapsing margins](#) from W3 Consortium.
- [Computing widths and margins](#) from W3 Consortium.

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How was this section?



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