

CSS Box Model

20 minutes

Introduction to Web Frontend

Outcome 1.15

Outcome 1.16

Outcome 1.22

Outcome 2.20

Outcome 3.3

WHAT THIS LESSON DOES

Dive into the world of CSS Box Model with this step-by-step lesson. Learn about margins, borders, padding, and content, and how they control the layout of a webpage. Explore CSS borders, border styles, widths, and colours. Understand padding and margins, and how to apply them to individual sides of an element. Engage in practical exercises to reinforce your learning.

CURRICULUM OUTCOMES

Outcome	What the specification asks for
1.15	consider the quality of the user experience when interacting with computers and list the principles of universal design, including the role of a user interface and the factors that contribute to its usability
1.16	compare two different user interfaces and identify different design decisions that shape the user experience
1.22	read, write, test, and modify computer programs
2.20	identify and fix/debug warnings and errors in computer code and modify as required
3.3	use appropriate programming languages to develop an interactive website that can display information from a database that meets a set of users' needs

WHAT STUDENTS SHOULD BE ABLE TO DO

- Understand the fundamental components of the CSS Box Model, including margins, borders, padding, and content.
- Apply CSS properties to customise borders with different styles, widths, and colours.
- Utilise padding to create space around content within elements for improved layout and readability.
- Implement margins to control spacing between elements on a web page.
- Demonstrate the ability to manipulate individual sides of borders, padding, and margins for precise design control.

BEFORE THE LESSON

- Open the in-lesson code editors yourself and run one border, padding and margin example so you can see the live preview render before class.
- Have a simple box diagram ready on the board: content in the middle, then padding, border, margin working outward. Students will refer back to it repeatedly.

CSS Box Model

HOW THE LESSON RUNS	
CSS Box Model	
CSS Borders	
border-style	
border-width	
border-color	
Border Exercise	
CSS Padding	
Padding for individual sides	
Padding Exercise	
CSS Margins	
Margin for individual sides	
Margin exercise	

TEACHING MOVES

- 1. CSS Box Model. Draw the four layers on the board before showing the screen. Stress the order from inside out: content, padding, border, margin. Point out padding and margin are both transparent, so the difference is inside versus outside the border.
- 3. border-style. Run two or three styles live so students see dotted, dashed and solid render differently. Note that with no border-style set, width and colour do nothing, a common source of frustration later.
- 4. border-width. Show the single-value version first, then the four-value shorthand. Say the order aloud as a clock: top, right, bottom, left. This same clockwise order returns for padding and margin.
- 5. border-color. Demonstrate a colour name, then a HEX and an RGB value producing the same colour, so students see the three formats are interchangeable, not three different things.
- 6. Border Exercise. Let students attempt all three properties before revealing the model answer. Watch for those who set colour and width but forget border-style, so nothing appears.
- 7. CSS Padding. Run the two-div comparison and ask students which is easier to read. Anchor padding as space between the content and its border, inside the box.
- 8. Padding for individual sides. Point out the background colour fills the padding area, which makes each side's padding visible. Have students predict which side looks fattest before you run it.
- 9. Padding Exercise. Two ids, two different tasks. Check students use the padding shorthand for one and padding-left for the other rather than applying the same rule to both.
- 10. CSS Margins. Run the six-div example. The first three touch, the last three have gaps. Ask what the difference is between this and padding, then reinforce: margin is outside the border.
- 11. Margin for individual sides. Show that margin-left pushes an element right and margin-top pushes it down. Let students see the shifting boxes so they connect the property name to the direction of movement.
- 12. Margin exercise. Four divs with four different margin combinations. Use this as the check for understanding. Circulate and confirm students can target individual sides confidently before the lesson ends.

WHAT TO WATCH FOR

- Students set border-width and border-color but leave out border-style, then cannot understand why no border appears. Show them a live example with width and colour but no style. Establish the rule: no border-style means no visible border, whatever else you set.
- Padding and margin are treated as the same thing because both create space. Return to the box diagram. Give an element a background colour: padding takes the background, margin stays transparent because it is outside the border.
- Confusion over the four-value shorthand order, applying values to the wrong sides. Drill the clockwise sequence starting at the top: top, right, bottom, left. Have them read each value aloud with its side when writing shorthand.

DIFFERENTIATION

- Emerging: Give a partly written rule with border-style already filled in, so the student only adds width and colour and sees an immediate result. Pair them with the box diagram on paper and have them label content, padding, border and margin before touching the editor.