# HTML & CSS Handout

English edition

## Contents

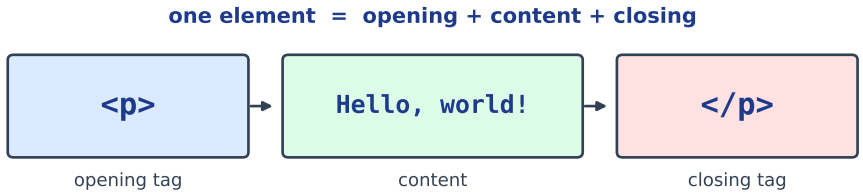
# 1 HTML basics

## 1.1 Your first page

HTML 超文本标记语言 describes a web page with tags 标签. A tag is a word in angle brackets, like `<p>`. Most come in pairs — an opening tag `<p>` and a closing tag `</p>` wrap some content. A tag plus its content is an element 元素.

```
<p>Hello, world!</p>
<p>This is my first web page.</p>
```

- The browser draws whatever is between the tags.
- A tag you forget to close, or spell wrong, may not show correctly.




Exam tip: most tags come in pairs — forgetting </p> breaks layout below

*One element = opening tag + content + closing tag*

## 1.2 Headings & paragraphs

Headings 标题 run from `<h1>` (biggest) down to `<h6>` (smallest). A paragraph 段落 is `<p>`. Use exactly one `<h1>` for the page's main title.

```
<h1>My Blog</h1>
<h2>About me</h2>
<p>I am learning to build web pages.</p>
```

## 1.3 Text formatting

Make text bold 加粗 with `<strong>` and italic 斜体 with `<em>`. A line break 换行 is `<br>` — it has no closing tag.

```
<p><strong>Warning:</strong> read this carefully.</p>
<p>First line<br>second line</p>
<p>You can <em>emphasise</em> any word.</p>
```

### Common mistakes

- Most tags come in pairs — `<p>...</p>`. Forgetting the closing tag breaks the layout below it.
- The tag goes in angle brackets; the text you see goes between the opening and closing tags.
- Headings run `<h1>` (biggest) to `<h6>` — do not pick a heading just for its size.

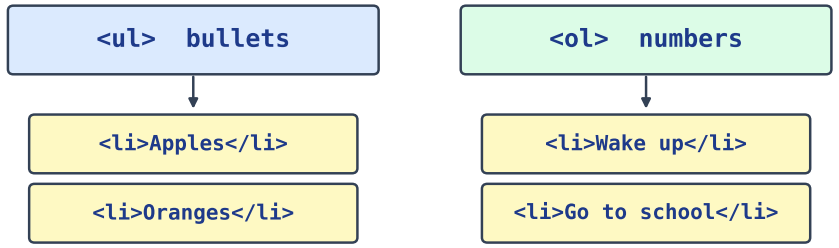


# 2 Lists, links & images

## 2.1 Lists

An unordered list 无序列表 `<ul>` shows bullets; an ordered list 有序列表 `<ol>` shows numbers. Each list item 列表项 is an `<li>`.

```
<ul>
  <li>Apples</li>
  <li>Oranges</li>
</ul>
<ol>
  <li>Wake up</li>
  <li>Go to school</li>
</ol>
```




Exam tip: every item is <li>; wrap them in <ul> (bullets) or <ol> (numbers)

*ul for bullets, ol for numbers; each item is li*

## 2.2 Links

A link 链接 is an anchor `<a>`. Its `href` attribute 属性 holds the address it points to.

```
<a href="https://example.com">Visit Example</a>
<br>
<a href="page2.html">Go to the next page</a>
```

- Add `target="_blank"` to open the link in a new tab.

## 2.3 Images

An image 图片 is `<img>` — it has no closing tag. `src` is the picture's address; `alt` is text shown if the image cannot load (and read aloud to blind users).

```
<img src=」
 ↪  "https://upload.wikimedia.org/wikipedia/commons/thumb/6/6b/Bitmap_VS_SVG.svg/
     alt="bitmap versus vector" width="120">
<p>If the picture is missing, the alt text shows instead.</p>
```

### Common mistakes

- An image needs `src` (the file) and `alt` (a description); a link needs `href`.
- `<img>` has no separate closing tag.
- A broken `src` path shows nothing — check the file name and folder.

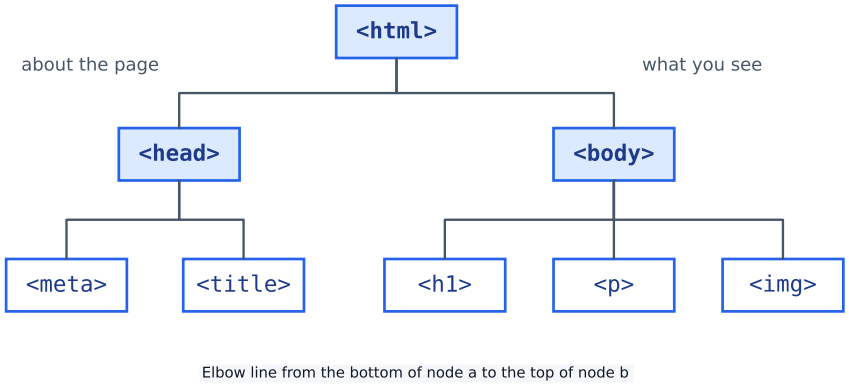


# 3 Page structure

## 3.1 A complete page

A real page has a fixed skeleton 骨架. `<!DOCTYPE html>` says it is HTML5. Everything sits inside `<html>`. The `<head>` holds information about the page; the `<body>` holds what you see.

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8">
    <title>My Page</title>
  </head>
  <body>
    <h1>Welcome</h1>
    <p>This is a complete page.</p>
  </body>
</html>
```




*A page is a tree: the head describes the page, the body holds what you see*

- The `<title>` shows in the browser tab.
- `<meta charset="utf-8">` lets the page show any language.

## 3.2 Comments & nesting

A comment 注释 `<!-- ... -->` is a note the browser ignores. Tags nest 嵌套 inside one another; indent 缩进 each level so the structure stays clear. Close tags in the reverse order you opened them.

```
<!-- a simple navigation bar -->
<nav>
  <ul>
    <li><a href="#">Home</a></li>
    <li><a href="#">About</a></li>
  </ul>
</nav>
```

### Common mistakes

- Tags must nest, not overlap: `<b><i>text</i></b>`, never `<b><i>text</b></i>`.
- A page needs `<html>`, a `<head>` (for the title and links) and a `<body>` (for what you see).
- A comment is `<!-- ... -->`; the browser ignores it.

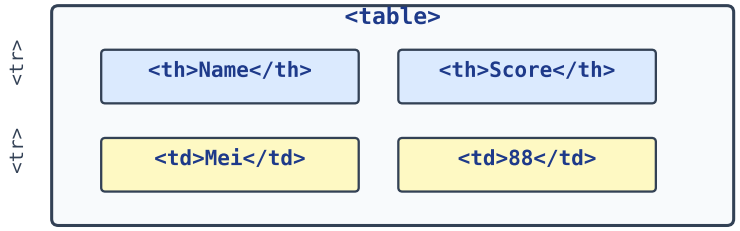


# 4 Tables & forms

## 4.1 Tables

A table 表格 `<table>` is built from rows `<tr>`. A header cell 单元格 is `<th>` (bold, centred); a normal data cell is `<td>`.

```
<table border="1" cellpadding="6">
  <tr><th>Name</th><th>Score</th></tr>
  <tr><td>Mei</td><td>88</td></tr>
  <tr><td>Sam</td><td>71</td></tr>
</table>
```




Exam tip: each <tr> is a row; use <th> for headers and <td> for data cells

*table → tr rows → th/td cells*

## 4.2 Forms

A form 表单 `<form>` collects input from the user. An `<input>` is a box; a `<label>` names it; a `<button>` submits 提交 it.

```
<form>
  <label>Name: <input type="text"></label>
  <br><br>
  <label>Age: <input type="number"></label>
  <br><br>
  <button type="submit">Send</button>
</form>
```

- Common `<input>` `type` values: `text`, `number`, `email`, `password`, `checkbox`.

### Common mistakes

- Table cells go inside rows: a `<tr>` holds the `<td>` cells.
- Every form input should have a matching `<label>` so it is clear and accessible.
- A button inside a form submits it by default — set `type="button"` if you do not want that.



# 5 Boxes & sections

## 5.1 div, span & semantic sections

A `<div>` is a generic block 块级 box that groups content on its own lines. A `<span>` is a generic inline 行内 box inside a line of text. You use them to group things so you can style or position them.

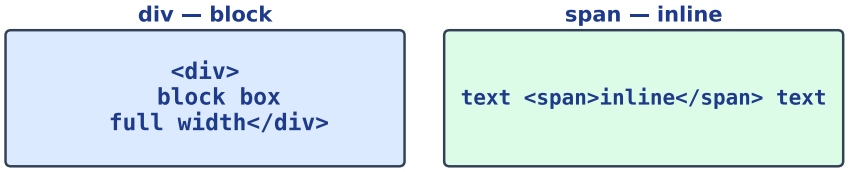
```
<div>
  <span>Price:</span> <span>$9.99</span>
</div>
<div>
  <span>Stock:</span> <span>in stock</span>
</div>
```

Semantic 语义 tags describe their role, which helps screen readers and search engines. Prefer them over plain `<div>` where they fit: `<header>`, `<nav>`, `<main>`, `<section>`, `<article>`, `<footer>`.

```
<header><h1>My Site</h1></header>
<main>
  <section>
    <h2>News</h2>
    <p>Today we launched the site.</p>
  </section>
</main>
<footer>© 2026 My Site</footer>
```

### Common mistakes

- `<div>` is a block (starts a new line); `<span>` is inline (stays in the text).
- Use semantic tags like `<header>`, `<nav>` and `<footer>` where they fit, not `<div>` for everything.
- Do not use a tag just for its default look — style it with CSS instead.




Exam tip: div groups sections; span styles a word inside a line; prefer semantic tags when possible

*div is a block box; span wraps inline text*

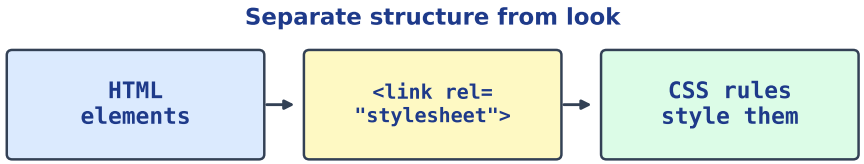


# 6 CSS basics

## 6.1 Adding CSS

CSS 层叠样式表 styles HTML. The simplest way is a `<style>` block in the `<head>` (a bigger site uses a separate `.css` file with `<link>`). A CSS rule 规则 has a selector 选择器, then `{ property: value; }` pairs called declarations 声明.

```
<style>
  p  { color: blue; font-size: 18px; }
  h1 { color: darkred; }
</style>
<h1>Styled heading</h1>
<p>This paragraph is blue.</p>
```




Exam tip: put CSS in a .css file and link it in <head>; class/id target elements

*Link a stylesheet so CSS rules style HTML elements*

## 6.2 Selectors: class & id

A class 类 styles many elements: add `class="..."` in HTML and write `.name` in CSS. An id 标识符 styles ONE element: `id="..."` and `#name`.

```
<style>
  .note  { color: green; }
  #title { font-size: 24px; }
</style>
<h1 id="title">Welcome</h1>
<p class="note">First note.</p>
<p class="note">Second note.</p>
```

The selectors you will meet most, in one place:

| Selector | Chooses |
|---|---|
| `p` | every `<p>` element |
| `.note` | everything with `class="note"` |
| `#title` | the one element with `id="title"` |
| `h1, h2` | several selectors at once |
| `nav a` | every `<a>` inside a `<nav>` |
| `.btn:hover` | one state of an element (see topic 10) |

### Common mistakes

- A class selector starts with `.` and an id selector with `#`.
- Link the stylesheet in the `<head>`, or put rules inside a `<style>` block.
- A class can be reused on many elements; an id should appear once per page.



# 7 Colours & text

## 7.1 Colours & backgrounds

Set the text colour with `color` and the background 背景 with `background-color`. A colour can be a name (`red`), a hex 十六进制 code (`#ff0000`), or `rgb(255, 0, 0)`.

```
<style>
  body { background-color: #f0f4ff; }
  .card { background-color: white; color: #1e3a8a; padding: 12px; }
</style>
<div class="card">A card with its own colours.</div>
```


Exam tip: colour can be a name, #hex, or rgb(); background-color paints the box

*CSS colours: named, hex, and rgb()*

## 7.2 Styling text

Common text properties: `font-size`, `font-weight` (e.g. `bold`), `font-family` 字体, `text-align` 对齐 (`left` / `center` / `right`), and `line-height` for spacing.

```
<style>
  h1 { font-family: Arial, sans-serif; text-align: center; }
  p  { font-size: 18px; line-height: 1.6; }
</style>
<h1>Centered title</h1>
<p>Readable paragraph text with comfortable line spacing.</p>
```

### Common mistakes

- `color` sets the text colour; `background-color` sets the background.
- A colour can be a name, a `#rrggbb` hex code, or `rgb(...)`.

- End each declaration inside the braces with a semicolon `;` — it separates the `property: value` pairs (the one after the last declaration is optional). The rule itself ends with the closing brace `}`.

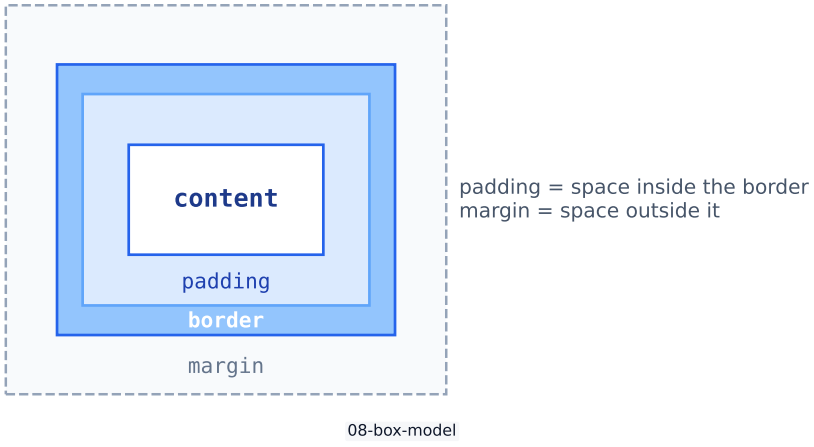


# 8 The box model

## 8.1 The box model

Every element is a box with four layers, from inside out: the content 内容, the padding 内边距 (space inside the border), the border 边框, and the margin 外边距 (space outside the border).

```
<style>
  .box { background: #dbeafe; border: 3px solid #2563eb;
         padding: 16px; margin: 20px; }
</style>
<div class="box">content + padding + border + margin</div>
```




*The box model: content, then padding, then border, then margin*

## 8.2 Margin & padding

`padding` adds space **inside** the border, pushing the content inwards. `margin` adds space **outside**, pushing other boxes away. Give one value for all sides, or four (top right bottom left).

```
<style>
  .a { background: #fde68a; padding: 4px; }
  .b { background: #bbf7d0; padding: 20px; margin-top: 16px; }
</style>
<div class="a">tight padding</div>
<div class="b">roomy padding</div>
```

## 8.3 Display

The `display` property sets how a box flows. `block` 块级 takes a whole line; `inline` 行内 sits within a line of text; `none` removes the box completely; `flex` lays the children in a row (next topic).

```
<style>
  .hidden { display: none; }
  .chip { display: inline; background: #e0e7ff; padding: 2px 8px;
↪  border-radius: 6px; }
</style>
<p>Visible text. <span class="hidden">(secret)</span> <span
↪  class="chip">a chip</span></p>
```

### Common mistakes

- Padding is inside the border; margin is the space outside it.
- `box-sizing: border-box` makes the set width include padding and border — often what you want.
- `display: none` hides an element completely; `visibility: hidden` leaves its space.



# 9 Layout

## 9.1 Width & centering

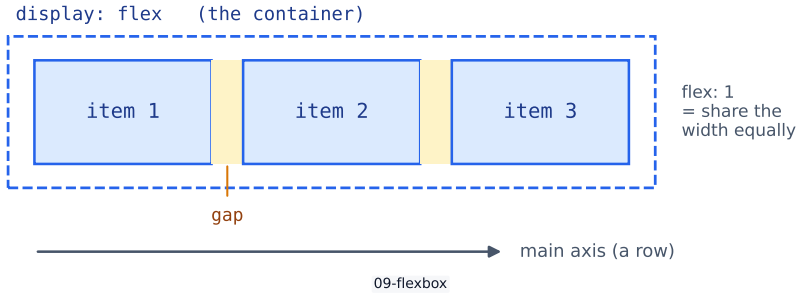
Set a box's `width`. To centre 居中 a block, give it a width and `margin: 0 auto` — `auto` shares the leftover space equally on the left and right.

```
<style>
  .page { width: 300px; margin: 0 auto; background: #e0e7ff;
          padding: 16px; text-align: center; }
</style>
<div class="page">A centered, fixed-width page.</div>
```

## 9.2 Flexbox

Flexbox 弹性布局 lays children out in a row (or a column). Set `display: flex` on the parent — the container 容器. `gap` adds space between children; `flex: 1` makes them share the width.

```
<style>
  .row { display: flex; gap: 10px; }
  .row div { background: #93c5fd; padding: 12px; flex: 1; text-align:
↪  center; }
</style>
<div class="row">
  <div>One</div>
  <div>Two</div>
  <div>Three</div>
</div>
```




*A flex container lays its items along the main axis; gap adds space between them*

## 9.3 Mini-project: a profile card

Combine boxes, colours, text and spacing into one small component 组件.

```
<style>
  .card { width: 240px; margin: 0 auto; border: 1px solid #cbd5e1;
          border-radius: 12px; padding: 16px; font-family: sans-serif; }
  .card h2 { margin: 0; color: #1e3a8a; }
  .card .role { color: #64748b; margin: 4px 0 8px; }
</style>
<div class="card">
  <h2>Mei Chen</h2>
  <p class="role">Student · Grade 11</p>
  <p>Loves maths and building web pages.</p>
</div>
```

### Common mistakes

- Centre a block with a set width using `margin: 0 auto`.
- Flexbox needs `display: flex` on the CONTAINER, not on the items.
- A width in `%` is relative to the parent, so check the parent's width too.



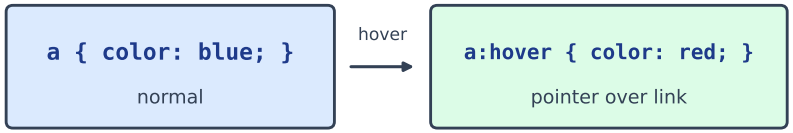
# 10 Going further

## 10.1 Hover & pseudo-classes

A pseudo-class 伪类 styles an element in one particular state. `:hover` applies while the mouse is over the element. Add `transition` 过渡 so the change happens smoothly instead of jumping.

```
<style>
  .btn { background: #2563eb; color: white; padding: 10px 18px;
         border: none; border-radius: 8px; font-size: 16px;
         transition: background 0.3s; }
  .btn:hover { background: #16a34a; }
</style>
<button class="btn">Hover me</button>
```

- Other useful pseudo-classes: `:focus` (an input the user clicked into) and `:first-child`.




Exam tip: :hover, :focus, :active are pseudo-classes — write selector:pseudo

*:hover styles an element while the pointer is over it*

## 10.2 Positioning

Positioning 定位 moves a box away from its normal place. `relative` nudges the box (and makes it the anchor 锚点 for its children); `absolute` places a box exactly, measured from the nearest positioned parent; `fixed` pins it to the screen even when the page scrolls.

```
<style>
  .card { position: relative; width: 260px; height: 90px;
          background: #dbeafe; border-radius: 10px; padding: 12px; }
  .badge { position: absolute; top: -10px; right: -10px;
           background: #dc2626; color: white; padding: 4px 10px;
           border-radius: 999px; font-size: 13px; }
</style>
<div class="card">
  A product card
  <span class="badge">NEW</span>
</div>
```

- `top`, `right`, `bottom`, `left` say how far to move — they only work on positioned boxes.

## 10.3 Media queries & responsive design

A responsive 响应式 page adapts to the screen size. A media query 媒体查询 applies its rules only while a condition about the screen holds, such as `max-width`.

```
<style>
  .banner { background: #2563eb; color: white; padding: 16px; }
  @media (max-width: 600px) {
    .banner { background: #16a34a; }   /* narrow screens turn green */
  }
</style>
<div class="banner">Resize the window: blue when wide, green when
↪  narrow.</div>
```

- Design mobile-first 移动优先: write the phone styles first, then add `@media (min-width: ...)` rules for bigger screens.
- Percent widths and `max-width` let boxes shrink with the screen.

### Common mistakes

- `:hover` sticks to its selector with no space: `.btn:hover`, not `.btn :hover`.
- `position: absolute` is measured from the nearest **positioned** parent — give that parent `position: relative`.



- A media query wraps whole rules: `@media (max-width: 600px) { .a { ... } }`.