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## Answer Key: Operation DOM Manipulation: A 9th Grade Web Architecture Quiz

Ninth graders synthesize DOM events, CSS specificity, and asynchronous logic to debug complex web interfaces and optimize user experiences.

**1. If a developer applies an inline style of 'color: red' to a paragraph, but an external stylesheet uses an ID selector for that same element setting it to 'color: blue', which color will render according to CSS specificity rules?**

**Answer:** B) Red, because inline styles override ID and class selectors.

In the CSS Cascade, inline styles (added directly to the HTML element) have a higher specificity weight than ID selectors, class selectors, or external stylesheets.

**2. The Document Object Model (DOM) is a programming interface that represents the HTML document as a tree structure, where each node is an object representing part of the document.**

**Answer:** A) True

The DOM acts as a structural map of the page; JavaScript uses this tree to identify and manipulate specific elements dynamically.

**3. When building a responsive dashboard, which CSS layout module is best suited for aligning items in a single dimension (either a row or a column) with flexible sizing?**

**Answer:** C) Flexbox

Flexbox (Flexible Box Layout) is designed for one-dimensional layouts, whereas CSS Grid is optimized for two-dimensional (rows and columns simultaneously) layouts.

**4. Analyze the following JavaScript snippet: [let x = '5'; let y = 2; console.log(x + y);]. What is the output and why?**

**Answer:** C) 52, because JavaScript performs type coercion and treats the plus sign as concatenation.

JavaScript uses 'type coercion.' When the + operator is used with a string and a number, it converts the number to a string and joins them together (concatenation).

**5. Semantic HTML tags like <main>, <article>, and <section> are primarily used to increase the visual font size of the text for users.**

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**Answer:** B) False

Semantic tags are used for accessibility and SEO; they define the meaning/structure of the content for screen readers and search engines, not the visual style.

**6. In the context of the Critical Rendering Path, which JavaScript method is most appropriate for selecting all elements with the class name 'gallery-item' to apply a transition?**

**Answer:** C) `document.querySelectorAll('.gallery-item')`

`querySelectorAll` returns a static NodeList of all elements matching the specified CSS selector, whereas `querySelector` only returns the very first match.

**7. Which of the following describes the behavior of 'Asynchronous' JavaScript execution (such as using Fetch API)?**

**Answer:** B) The script continues running other tasks while waiting for a background task to finish.

Asynchronous programming allows the browser to remain responsive by handling long-running tasks (like API calls) in the background while other code continues to execute.

**8. To ensure a website is accessible to users with visual impairments, which HTML attribute must be included on `<img>` tags to describe the image content?**

**Answer:** D) alt

The 'alt' (alternative text) attribute is critical for screen readers to describe images to users who cannot see them and is a core requirement of web accessibility standards.

**9. If you set an element's CSS position property to 'absolute', it is positioned relative to its nearest positioned ancestor rather than the browser window itself.**

**Answer:** A) True

An absolutely positioned element looks up the DOM tree for the first ancestor that has a position of 'relative', 'absolute', or 'fixed' to use as its coordinate reference.

**10. In the context of Event Bubbling, what happens when a user clicks a nested `<button>` inside a `<div>` that both have click event listeners?**

**Answer:** C) The button listener fires first, followed by the div listener.

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Event bubbling means the event starts at the most specific element (the target) and 'bubbles up' through its ancestors, triggering their event handlers in order.