**Core Web vitals**

Core Web Vitals are a set of specific factors that Google considers important in a **webpage’s overall user experience.**

The three main Core Web Vitals metrics in detail, along with examples:

**1. Largest Contentful Paint (LCP)**

**Definition**: LCP measures the time it takes for **the largest content element visible in the viewport to load.** This could be an image, video, or a large block of text.

**Why It Matters**: LCP is important because it directly affects how quickly users **perceive the page to load.**

**Performance Guidelines**:

* **Good**: ≤ 2.5 seconds
* **Needs Improvement**: 2.5 to 4.0 seconds
* **Poor**: > 4.0 seconds

**Example**: Imagine a blog post with a large hero image at the top. The time it takes for this image to fully load and be visible to the user is the LCP.

**HTML**

<img src="hero-image.jpg" alt="Hero Image">

**2. First Input Delay (FID)**

**Definition**: FID measures the time from when a user first interacts with your page (e.g., clicks a link, taps a button) to the **time taken when the browser is actually able to respond to that interaction.**

**Why It Matters**: FID is crucial for user interactivity. A low FID ensures that the page is responsive and interactive, providing smooth user experience.

**Performance Guidelines**:

* **Good**: ≤ 100 milliseconds
* **Needs Improvement**: 100 to 300 milliseconds
* **Poor**: > 300 milliseconds

**Example**: Consider a login form. The time it takes from when a user clicks the “Submit” button to when the browser starts processing the request is the FID.

**HTML**

<button onclick="submitForm()">Submit</button>

**3. Cumulative Layout Shift (CLS)**

**Definition**: CLS measures the sum total of all individual layout shift scores for every unexpected layout shift that occurs during the entire lifespan of the page. It quantifies how much the page layout shifts unexpectedly.

**Why It Matters**: CLS is important because unexpected layout shifts can be frustrating for users. A low CLS ensures that the page is visually stable and provides a better user experience.

**Performance Guidelines**:

* **Good**: ≤ 0.1
* **Needs Improvement**: 0.1 to 0.25
* **Poor**: > 0.25

**Example**: Imagine reading an article and suddenly an ad loads above the text, causing the content to shift down. This unexpected shift contributes to the CLS score.

**HTML**

<div style="height: 200px;">Ad space</div>

<p>Content that shifts down when the ad loads.</p>

**4. Cumulative Layout Shift (CLS)**

**Definition**: CLS measures the sum total of all individual layout shift scores for every **unexpected layout shift that occurs during the entire lifespan of the page**. It quantifies how much the page layout shifts unexpectedly.

**Why It Matters**: CLS is important because unexpected layout shifts can be frustrating for users. A low CLS ensures that the page is visually stable and provides a better user experience.

**Performance Guidelines**:

* **Good**: ≤ 0.1
* **Needs Improvement**: 0.1 to 0.25
* **Poor**: > 0.25

**Example**: Imagine reading an article and suddenly an ad loads above the text, causing the content to shift down. This unexpected shift contributes to the CLS score.

**HTML**

<div style="height: 200px;">Ad space</div>

<p>Content that shifts down when the ad loads.</p>

**5. Total Blocking Time (TBT)**

**Definition**: Total Blocking Time (TBT) measures **the total amount of time that the main thread of a webpage is blocked** by long tasks, preventing it from responding to user interactions.

A long task is any task that takes more than 50 milliseconds to complete.

**Why It Matters**: TBT is crucial because it directly impacts the interactivity of a webpage. High TBT means that the browser is busy with tasks and cannot respond to user inputs like clicks, taps, or key presses, leading to a poor user experience.

**Performance Guidelines**:

* **Good**: ≤ 200 milliseconds
* **Needs Improvement**: 200 to 600 milliseconds
* **Poor**: > 600 milliseconds

**Tools to Measure Core Web Vitals**

**Google Search Console**: Provides site-wide Core Web Vitals data and highlights URLs that need attention.

**PageSpeed Insights**: Offers detailed Core Web Vitals scores for specific pages with actionable suggestions.

**Chrome DevTools (Lighthouse)**: Helps identify and troubleshoot elements contributing to poor Core Web Vitals scores.

**Benefits of Improving Core Web Vitals**

* **Enhanced User Experience**: Faster loading times, better interactivity, and visual stability improve overall user satisfaction.
* **SEO Boost**: Google **uses Core Web Vitals as a ranking factor**, so improving these metrics can help your site rank higher in search results.
* **Increased Engagement**: Better performance metrics can lead to lower bounce rates and **higher user engagement.**

[By focusing on these Core Web Vitals, you can significantly improve your website’s performance and user experience](https://www.allaboutai.com/ai-seo/core-web-vitals-guide/)