1.) HTTP stands for Hypertext Transfer Protocol and is the protocol used by the World Wide Web and it defines how the messages are formatted and sent/received between the web servers and browsers that are accessing the servers.

2.) When an HTTP request is being fired, it is sent from the client to the DNS server (Domain Name System Server), it then connects to the web server, sends its request, waits for the server and then fires the response back through the same process to the client's browser. The response is then read through the browser window and or developer console, depending on the action requested through the code.

3.) A web server is a program that uses the HTTP protocol to serve the files that create and design the UI of the web pages that the user is viewing through their web browser window. The three main web servers are the Apache web server, the Nginx web server, and the Internet Information Services web server (IIS). The Apache web server is known to be the most used web server and is developed and maintained by an open source community. However, it is governed by the Apache Software Foundation. Apache is also good for server-side languages like PHP. The Nginx web server is also an open source web server and is maintained by Nginx Inc. It focusses on high concurrency, performance, and low memory usage. It is very good at serving static content and is commonly used for advanced solutions such as load balancing and serving as a reverse proxy. Last on the list of three, but certainly, not least is the IIS server. It is proprietary and is developed and maintained by Microsoft. What is unique about the IIS server is that it already has an out of the box support for FTP and SMTP protocols. Another newer solution is the JavaScript based server known as Node.js. It is a server-side JavaScript environment for network applications such as web servers. This only has been spread widely recently and was created by Ryan Dahl in 2009.

4.) The browser rendering engine is what manages the markup of the HTML and the CSS and then displays the formatted content on the screen. The scripting engine mainly only focusses on the JavaScript written by the developer and processes the JavaScript to be implemented on the web page and allows for interaction between the user and page on a client side or the page and the server with AJAX.

5.) HTML5 is a markup language for the structure of the World Wide Web’s contents. HTML stands for Hypertext Markup Language. HTML5 is known to support the traditional HTML and XHTML styled syntax and utilizes new APIs and error handling that had not been used or created before. HTML5 is mainly based off of using JavaScript within the HTML document to create interactive and modern web applications. HTML5 is still considered to be in development and has not officially been released as of this date of September 6, 2017. However, most of the modern day web browsers all support the use of HTML5 elements. Some of the newer features that are offered in HTML5 are the canvas elements and support for scalable vector graphics, MathML (Mathematical Markup Language), accessibility features and better form input specifications, new tags such as: article, aside, audio, canvas, figure, header, footer, nav, time, and video. All of these tag’s purposes were able to have been done in the past but most likely required further scripting through JavaScript and have also required styling from the CSS in the web page. There is also further support for meta tags that will not only help the browser render the page, but help for SEO or Search Engine Optimization in the future. These are just a few of the new amazing features and tags of the HTML5 language. This language and JavaScript, as well as the addition of CSS maintain their growth at a rapid pace and continue to consolidate their language to assist developers instead of having to use frameworks and libraries for everything.

6.) The HTML doctype must be the first thing in your HTML document at the top and it is located before the beginning HTML tag. In the past, there were many different forms of doctype declarations for HTML 4.01 Strict and HTML 4.01 Transitional, as well as the frameset. There also used to be different doctype declarations for XML files. Now, for HTML5, there is only one type of doctype and it is written as **<!DOCTYPE html>**. This declaration is supported by all major browsers such as Chrome, Firefox, Safari, Microsoft Edge, and Opera. As for certain elements and attributes, not all of them are compatible with each browser. An example of this is that input tags that utilize a certain type might not be readable by a certain browser and are automatically switched over to a standard input type of text.

7.) For the specific HTML5 elements of article, nav, header, section, footer, and aside, there are multiple different explanations to their purposes. Most of these definitions are given by W3 Schools.com. The article tag specifies independent and self-contained content. An article should make sense on its own and it should be possible to distribute it independently from the rest of the site. Many article elements can be found in online forums, blogs, news stories, and comments within different web pages. The nav element stands for the word navigation. This tag/element encompasses a set of navigation links. W3 Schools states that it obviously not a smart idea to enclose all of your links into a navigation element and only those that are going to tremendously be used for major blocks of navigation links. The set of links found in an HTML tag are automatically going to be displayed inline. The header element is a container element for introductory content and encapsulates the important headings and navigation. The footer tag defines the same idea as the header in the document, except for the fact that it is located at the bottom. It usually contains authorship information, copyright information, contact information, sitemap, back to top links, and related documents. The section tag defines different sections in the document like chapters, headers, footers or any other sections of information in the document. The aside tag defines some content aside from the content it is placed in. The aside content should always be related to the surrounding content.

8.) One of the main new HTML 5 and JavaScript APIs is the addition of the new canvas element tag. We have used the canvas element and the JS API in the ICT 4570 course which is titled Web Scripting with JavaScript. It can be used to draw graphs, make photo compositions, create animations, or even do real-time video processing and rendering. There is also the very simple document CSS API and allows the developer to use JavaScript to be able to manipulate the styles of the document in different events or cases without having to just adjust them on the statics CSS3 file that is linked to the HTML5 document. Most any style that would be declared with the CSS would be able to be edited using the same tags in the JavaScript CSS API. The web developer also has the option to use JavaScript and create, remove, and change the elements that render into the document and what is accessible by the user that is using the web page. With the newly added support of SVG or Scalable Vector Graphics in an HTML5 document, there is an added API that allows the developer to draw, manipulate, and stylize SVGs on the web page. Most of these are found in the canvas on the web page and will also be edited and created with the HTML5 and JS canvas API. These are just a few of the hundreds of different APIs and properties that can be accessed by the developer to create a very modern and interactive web application without even needing to know the use of frameworks like Facebook’s React.js or Google’s Angular.js.

9.) CSS or Cascading Style Sheets can access two different selector types in an HTML document for the developer to be able to stylize their Mark Up. These two different selector types are known as an ID or a Class. IDs and Classes can also be accessed through the JavaScript that is injected and read into the HTML document. Css-tricks.com gives a good definition of each of these different selectors. IDs are unique and elements can only have one ID at a time. Also, the page can only have one element with that ID. Classes are not considered to be unique. You can use the same class on multiple elements and you can use multiple classes on the same element. An ID would look something like this **<div id=”hello”></div>** and classes can be written like this **<div class=”hello world”></div>**. In the example of the classes, there are two classes given to the div and are separated by a space. In the CSS, the ID from above would identified as **#hello{}** and the classes would be identified as **.hello{}** & **.world{}**. As you can see, there are minute differences, but you have to be aware of the symbols and the meaning behind the differences of classes and ids. Also, it is important to know that adding classes and ids to elements does not change their style or functionality unless the developer specifies that in the CSS or JavaScript. Libraries like jQuery make it super easy for CSS manipulation and easy to use selectors in the JavaScript. It is also important to know that elements can have bot ids and classes at the same time and this may be written as **<li id=”hello” class=”world”></li>**. There also Is nothing that you can do with a class versus id or vice versa in the CSS or JavaScript. All styles will react the same way when they are coded. JavaScript just depends on one-page element consisting of the same id, no more than one.

10.) Modernizr.js is a JavaScript library that detects which HTML5 and CSS3 features your visitor’s browser supports. It allows developers to test for some of the technologies and the provide fallbacks for browsers that do not support those new features. There is an application when downloading Modernizr that allows you to tell the library to search the code for specific elements or features.

11.) The meta viewport tag looks like this: <meta name="viewport" content="width=device-width, initial-scale=1.0"> and is used for web developers and designers to take full control over the viewport. This is one of the most important tags that is currently being used in web development, due to the fact that it fully controls the ability to utilize responsive techniques in your code. It allows the viewport to change depending on the screen resolution or orientation, meaning landscape versus portrait. The way to manipulate the content without frameworks like Bootstrap’s grid system is to be able to use CSS media queries. Once the meta tag for the viewport is inserted into the head of the HTML document, the developer can then go to the CSS and use @media queries with specified resolutions to be able to tell the document to display different styles depending on the screen resolution and device that it is being rendered on. It is important to not set images or other elements on the page to be larger than the viewport because that the page will scroll horizontally and the idea is for it to be only vertical scrolling.

12.) Twitter’s Bootstrap is an HTML, CSS, and JavaScript framework that is free and is only intended for front-end development. It is created and maintained by Twitter for faster and easier web development. Although there are already designed templates from Bootstrap for page layouts, buttons, forms, tables, navigation, modals, image carousels, and many others, they are able to be manipulated because Bootstrap is completely open-sourced. Bootstrap makes every web page inherently responsive with its 12 column grid system. Each of these elements can access the grid from the classes of xs (for phones), sm (for tablets), md (for desktops), and lg (for larger desktops). As mentioned before, these classes can be used together to create more dynamic and flexible web pages. All of the rows of the grid system must be placed within a div with the class container. Each column is separated by a white space of padding. Also, Bootstrap relies upon the jQuery JavaScript library, which allows developers to add additional jQuery to their web pages and web applications. Bootstrap is powerful and is changing as well with the new addition of version 4 which is still in it’s Alpha stage. You can either download the entire library with its files and directories or link to its CDN/Content Delivery network. If you are looking to have the least amount of issues with your site, it is smarter to download the entire library and FTP it with all of your own coded files to ensure that there will be no error. If using a CDN, there is a chance that the link or server holding the files will become damaged or removed, therefore rendering your code useless.