Metadata and Annotations:

In Java, annotations and metadata are closely related concepts. Annotations are a form of metadata that allows developers to add additional information to classes, methods, variables, and other program elements. This metadata can be used by other tools and frameworks to automate certain tasks, such as generating documentation or enforcing coding standards.

Annotations are declared using the @ symbol followed by the name of the annotation. They can also include parameters to provide additional information. For example, the @Deprecated annotation is used to indicate that a method or class is no longer recommended for use, while the @Override annotation is used to indicate that a method is intended to override a method in a superclass or interface.

Metadata, on the other hand, is a more general term that refers to any data that describes other data. In the context of Java, metadata includes information such as the name, type, and visibility of a class or method, as well as any annotations that have been added. This information can be retrieved at runtime using the Reflection API, which allows Java programs to examine and modify the structure and behavior of objects and classes.

In summary, annotations are a specific type of metadata that provide additional information about program elements and can be used by other tools and frameworks to automate certain tasks.