Data Types (primitive vs. referenced types)

Integer overflow and underflow

Know how an object differs from a primitive data type.

Articulate how reference types differ from value types.

Know the difference between instance and static methods.

Explain how a string is stored in memory as a collection of characters.

Be able to explain how enumerations work and how they are useful.

Know how to convert between Binary, Octal and Hexadecimal

Arrays, ArrayLists and HashMap

Articulate the function of arrays and how they can be used.

Know how elements of an array are stored in memory.

Explain default values for arrays and the purpose they serve.

Articulate how multi-dimensional arrays (including staggered arrays) work and how they are stored in memory.

Explain the difference between the heap and the stack memory spaces.

Know the difference between a standard array and an associative array (map).

Know how to add key/value pair into the hashmap and how to update the value based on a given key

Classes

Identify packages, classes, instances (objects), and their differences

Know what data is stored on the heap and the stack in memory

Identify the function of access modifiers (private, public, protected, and default)

Build and use constructors, accessors (getters) and mutators (setters)

Build, trace, and overloaded functions

Articulate the function and use of the self-reference (“this”) keyword

Articulate the differences between variable declaration, initialization, and assignment.

Know how static variables / methods differ in function and use from non-static variables / methods

Understand the use and function of nested, inner, private nested, and local classes

Understand the use and function of static and instance initialization blocks

Understand how invoke toString and equals methods

Understand the difference between passing primitive types vs. passing objects as arguments