

Introduction to **Java**

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This test will evaluate the familiarity of basic programming concepts as well as the knowledge of the Java programming language, which is used as the programming language of numerous FIRST[®]robotics competitions.

The following topics will be on this test:

- Primitive Types and Operations (*int, byte, boolean, etc.*)
- Modifiers (*final, public, static, etc.*)*
- Comparison Operators (*==, !=, >=, etc.*)
- Assignment operators (*+=, *=, =, etc*)
- Flow Control (*if, for, break, etc*)
- Methods and Parameters*
- Single- and Multi-Dimensional Arrays
- Object Oriented Programming*
- Inheritance and Polymorphism*
- Programming Habits and Conventions

* Starred items are extremely important in programming a robot

DO NOT BEGIN UNTIL INSTRUCTED TO DO SO

PART ONE: Multiple Choice

Instructions: Choose the correct solution to the problem, there is only one correct answer for each problem.

1. Example Question One

- (a) Answer One
- (b) Answer Two
- (c) Answer Three
- (d) Answer Four

2. Example Question Two

- (a) Answer One
- (b) Answer Two
- (c) Answer Three
- (d) Answer Four

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PART TWO: Open Ended Response

*Instructions: Write the most efficient solution to the following methods. You will **not** be given any extra paper.*

1. Write a method that will return an array of n length, filled with the decimal approximations of the sequence $\left[\frac{1}{1}, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \dots, \frac{1}{n}\right]$ where n is the integer parameter of the method.

```
public static int[] problem1(int n){
```

DO NOT CONTINUE UNTIL INSTRUCTED TO DO SO

2. Write a method that will recursively determine if a word *str* is a palindrome, where *str* is a string parameter of the method.

```
public static boolean problem2(String str){
```

END OF EXAM