Name:

True or False:
1. _____ A Java program can have two different variables named number and Number.
2. _____ myprogram.java is a valid variable name in a Java program.
3. _____ Java will throw an error if an integer value is assigned to a double variable.
4. _____ Every if statement must have an else block.
5. _____ A switch statement allows integer, character, and String values as its controlling expression.
6. _____ `!((10 > 3) && ("Hello".equals("hello"))`
7. _____ Every for loop can be rewritten as a while loop.
8. _____ Mutator methods cannot return a value.
9. _____ Constructors can invoke other methods.
10. _____ The last index in an array is equal to the array length.

Code Snippets:
11. Give the declaration for two variables called count and distance. count is of type int and is initialized to zero. distance is of type double and is initialized to 1.5.

12. Write a Java assignment statement that will set the value of the variable interest to the value of the variable balance multiplied by the value of the variable rate. The variables are of type double.

13. Write Java statements that will cause the following to be written to the screen:
```
One two buckle your shoe.
Three four shut the door.
```

14. Suppose number is a variable of type int. Write an if-else statement that outputs the word "Positive" if the value of the variable number is greater than 0 and outputs the words "Not positive" if the value of number is less than or equal to 0.

15. Write a static method that takes a double value and returns the integer value that is one less than half of the given value (rounded down).

Code Prediction:

16. What is the output produced by the following lines of program code?

```
char a, b;
a = 'b';
System.out.println(a);
b = 'c';
System.out.println(b);
a = b;
System.out.println(a);
```

17. What is the output produced by the following lines of program code?

```
int result = 11;
result /= 2;
System.out.println("result is " + result);
```

18. If the program code is as follows:

```
Scanner keyboard = new Scanner(System.in);
int n = keyboard.nextInt();
String s1 = keyboard.nextLine();
String s2 = keyboard.nextLine();
```

And the input is the following:

```
2 heads are
```

```
better than
1 head.
```
What are the values in n, s1, and s2 after the code runs?

19. What is the output produced by the following lines of program code?
```java
for (double sample = 2; sample > 0; sample = sample - 0.5)
   System.out.print(sample + " ");
```

20. What is the output produced by the following lines of program code?
```java
char[] letter = {'a', 'b', 'c'};
for (int index = 0; index < letter.length; index++)
   System.out.print(letter[index] + ", ");
```

Short Answer:
21. What is typecasting and when is it useful?

22. What is the difference between System.out.println and System.out.print?

23. What is short-circuit evaluation?

24. What is an algorithm?

25. What is the most important difference between a while statement and a do-while statement?

26. To use the static method Math.random() do we need to create a Math object first? Why or why not?

27. What is the difference between an instance variable and a static variable?

28. What does the keyword `this` refer to?

29. Explain public and private modifiers, and why you would use one or the other at a given time.

30. What is overloading?