

1. For each statement, circle the response (or write its letter on the underscore) that best completes that statement.

(i) _____ is the programming language used in this course as a vehicle for learning about programming and software.

- a. jGrasp b. HTML c. Java d. Microsoft Windows

(ii) Placing comments in Java source code is important because _____ .

- a. the compiler ignores them
b. the Java compiler translates them into executable code
c. they aid the (human) reader's understanding of the code
d. they mention essential keywords

(iii) A Java program in which syntax errors are present _____ .

- a. will throw an exception when executed
b. will, in all likelihood, produce incorrect output when executed
c. cannot be executed
d. is what I typically get when I write a program!

(iv) _____ is **not** among the primitive data types in Java.

- a. int b. String c. double d. char

(v) In Java, the value of the expression $11 / 2$ is _____ .

- a. 5.5 b. 5.0 c. 5 d. all the above

(vi) In Java, **static** is an example of a(n) _____ .

- a. identifier b. keyword c. class d. object

(vii) In Java, the value of the expression $2 + 4 * 7$ is _____ .

- a. "228" b. 42 c. 30.0 d. 30 e. none of the above

(viii) In Java, the value of the expression $"2" + 4 * 7$ is _____ .

- a. "228" b. 42 c. 30.0 d. 30 e. none of the above

(ix) In Java, assuming that the variable `m` is of type `int` and has value 5, the value of the expression $m - 2 < 0$ is _____ .

- a. undefined b. 3 c. true d. false e. `m`

(x) In a Java program, expressions such as 351 and 'T' are referred to as _____ .

- a. literals b. variables c. objects d. methods

(xi) jGrasp is a(n) _____ .

- a. programming language b. operating system
c. IDE (integrated development environment) d. piece of garbage

(xii) If a Java program produces incorrect output, the most likely cause is a(n) _____ .

- a. syntax error b. hardware error c. Internet snafu d. logic error

2. In the Java program below, identify (by circling and labeling) at least one occurrence of each of the following:

- | | | |
|--------------------------|----------------------|----------------------------------|
| (A) assignment statement | (B) comment | (C) numeric literal |
| (D) method call | (E) method heading | (F) variable declaration |
| (G) String literal | (H) actual parameter | (I) formal parameter declaration |
| (J) (type) cast | (K) keyword | (L) boolean expression/condition |

```
/* Java program that produces a BMI table
*/
public class BodyMassIndexProgram {

    public static void main(String[] args) {

        int h = 68;    // height in inches

        for (int w = 120; w <= 200; w = w+2)
        {
            System.out.print("weight " + w + " yields BMI ");

            System.out.println(bodyMassIndex(h,w));
        }
    }

    /* Returns the body mass index of a person with the given height and weight
    */
    private static double bodyMassIndex(int height, int weight)
    {
        int heightSquared = height * height;

        return (double)(703 * weight) / heightSquared;
    }
}
```

3. Show the output produced by running the following program. (If you wish, for each call to the method `silly()`, show the values of local variables `i` and `val` at the end of each iteration of the loop. This may help you to get more partial credit in case your answer is wrong.)

```
public class Silly {

    public static void main(String[] args)
    {
        System.out.println("First silly value is " + silly(4));

        System.out.println("Second silly value is " + silly(5));
    }

    private static int silly(int n)
    {
        int val = 1;

        for (int i=2; i <= n; i = i+1)
        {
            val = val * i;    // multiply val by i
        }
        return val;
    }
}
```

4. Supply missing code to the `drawFigure` method in the Java program below so that its output is as follows. (See extra credit part on back of page.)

```
!!!!!!
\!!!!/
\\!!!!//
\\\!!!!///
*****
```

```
!!!!!!!!!!!!
\!!!!!!!!!!!!/
\\!!!!!!!!!!!!//
\\\!!!!!!!!!!!!///
\\\\!!!!!!!!!!!!////
\\\!!!!!!!!!!!!///
\\\\!!!!!!!!!!!!////
*****
```

```
public class DrawFigTest1_F11 {

    public static void main(String[] args)
    {
        drawFigure(4);          // draw figure of height 4
        System.out.println();
        drawFigure(6);          // draw figure of height 6
    }

    /* prints the specified character (ch) the specified number (n) of times
    */
    private static void printChars(char ch, int k)
    {
        for (int j=0; j < k; j = j+1) { System.out.print(ch); }
    }

    private static void drawFigure(int height) {

        for ( int i = _____ ; _____ ; i = _____ ) {

            printChars( _____ , _____ );    // print some backslashes

            printChars( _____ , _____ );    // print some exclamation points

            printChars( _____ , _____ );    // print some slashes

            System.out.println();
        }

        printChars( _____ , _____ );        // print some asterisks

        System.out.println();
    }
}
```

For extra credit, explain how to modify the `drawFigure` method so that it is capable of drawing similar figures, but using characters other than backslashes, exclamation points, slashes, and asterisks, according to the choice of the caller. For example, the method should be able to draw

```
$$$$$$  
|$$$$+  
||$$$+  
|||$+++  
%%%%%%%%
```