Test

Java Building Blocks

1. Which of the following are valid Java identifiers? (Choose all that apply.)

   A. `_`

   B. `_helloWorld$`

   C. `true`

   D. `java.lang`

   E. `Public`

   F. `1980_s`

   G. `_Q2_`

2. What lines are printed by the following program? (Choose all that apply.)

```
1: public class WaterBottle {
  2:     private String brand;
  3:     private boolean empty;
  4:     public static float code;
  5:     public static void
main(String[] args) {
  6:         WaterBottle wb = new
WaterBottle();
  7:
System.out.println("Empty = " +
wb.empty);
  8:
System.out.println("Brand = " +
wb.brand);
  9:         System.out.println("Code
= " + code);

 10:     } }
```

A. Line 8 generates a compiler error.

B. Line 9 generates a compiler error.

C. `Empty =`

D. `Empty = false`

E. `Brand =`

F. `Brand = null`

G. `Code = 0.0`

H. `Code = 0f`

3. Which of the following code snippets about var compile without issue when used in a method? (Choose all that apply.)

A. `var spring = null;`

B. `var fall = "leaves";`

C. `var evening = 2; evening = null;`

D. `var night = new Object();`

E. `var day = 1/0;`

F. `var winter = 12, cold;`

G. `var fall = 2, autumn = 2;`

H. `var morning = ""; morning = null;`

4. Which of the following statements about the code snippet are true? (Choose all that apply.)

```
4: short numPets = 5L;

5: int numGrains = 2.0;

6: String name = "Scruffy";

7: int d = numPets.length();

8: int e = numGrains.length;

9: int f = name.length();
```

A. Line 4 generates a compiler error.

B. Line 5 generates a compiler error.

C. Line 6 generates a compiler error.

D. Line 7 generates a compiler error.

E. Line 8 generates a compiler error.

F. Line 9 generates a compiler error.

5. Which statements about the following class are true? (Choose all that apply.)

```
 1: public class River {
   2:     int Depth = 1;
   3:     float temp = 50.0;
   4:     public void flow() {
   5:         for (int i = 0; i < 1; i
++) {
   6:             int depth = 2;
   7:             depth++;
   8:             temp--;
   9:         }
  10:
System.out.println(depth);

  11:
System.out.println(temp); }
  12:    public static void
main(String... s) {
  13:        new River().flow();
  14: } }
```

A. Line 3 generates a compiler error.

B. Line 6 generates a compiler error.

C. Line 7 generates a compiler error.

D. Line 10 generates a compiler error.

E. The program prints 3 on line 10.

F. The program prints 4 on line 10.

G. The program prints 50.0 on line 11.

H. The program prints 49.0 on line 11.

6. Which of the following are correct?
   (Choose all that apply.)

   A. An instance variable of type `float`
      defaults to `0`.

   B. An instance variable of type `char`
      defaults to `null`.

   C. An instance variable of type `double`
      defaults to `0.0`.

   D. An instance variable of type `int`
      defaults to `null`.

   E. An instance variable of type `String`
      defaults to `null`.

   F. An instance variable of type `String`
      defaults to the empty string `" "`.

   G. None of the above

7. Which of the following are correct?
   (Choose all that apply.)

   A. A local variable of type `boolean`

   defaults to `null`.

   B. A local variable of type `float` defaults
      to `0.0f`.

   C. A local variable of type `double` defaults
      to `0`.

   D. A local variable of type `Object` defaults
      to `null`.

   E. A local variable of type `boolean`
      defaults to `false`.

   F. A local variable of type `float` defaults
      to `0.0`.

   G. None of the above

8. Which of the following are true? (Choose all that apply.)

  A. A class variable of type `boolean`

    defaults to `0`.

  B. A class variable of type `boolean` defaults to `false`.

  C. A class variable of type `boolean` defaults to `null`.

  D. A class variable of type `long` defaults to `null`.

  E. A class variable of type `long` defaults to `0L`.

  F. A class variable of type `long` defaults to `0`.

  G. None of the above

9. Which of the following statements about garbage collection are correct? (Choose all that apply.)

A. Calling `System.gc()` is guaranteed to free up memory by destroying objects eligible for garbage collection.

B. Garbage collection runs on a set schedule.

C. Garbage collection allows the JVM to reclaim memory for other objects.

D. Garbage collection runs when your program has used up half the available memory.

E. An object may be eligible for garbage collection but never removed from the heap.

F. An object is eligible for garbage collection once no references to it are accessible in the program.

G. Marking a variable `final` means its associated object will never be garbage collected.

10. Which statements about the following class are correct? (Choose all that apply.)

```
1: public class PoliceBox {
2:     String color;
3:     long age;
4:     public void PoliceBox() {
5:         color = "blue";
6:         age = 1200;
7:     }
8:     public static void
main(String []time) {
9:         var p = new PoliceBox();
10:        var q = new PoliceBox();
11:        p.color = "green";
12:        p.age = 1400;
13:        p = q;
14:
System.out.println("Q1="+q.
color);
15:
System.out.println("Q2="+q.age);
16:
System.out.println("P1="+p.
color);
17:
System.out.println("P2="+p.age);
18: } }
```

A. It prints Q1=blue.

B. It prints Q2=1200.

C. It prints P1=null.

D. It prints P2=1400.

E. Line 4 does not compile.

F. Line 12 does not compile.

G. Line 13 does not compile.

H. None of the above

G. Marking a variable final means its associated object will never be garbage collected.

11. Which of the following legally fill in the blank so you can run the `main()` method from the command line? (Choose all that apply.)

```
public static void
    main(_____) {}
```

A. `String... var`

B. `String My.Names[]`

C. `String[] 123`

D. `String[] _names`

E. `String... $n`

F. `var names`

G. `String myArgs`

12. Which of the following expressions, when inserted independently into the blank line, allow the code to compile? (Choose all that apply.)

```
 public void
printMagicData(_____) {
     double magic = ;
     System.out.println(magic);
  }
```

A. 3_1

B. 1_329_.0

C. 3_13.0_

D. 5_291._2

E. 2_234.0_0

F. 9___6

G. _1_3_5_0

H. None of the above