

Review Questions

The answers to the chapter review questions can be found in the Appendix.

1. Which of the following are legal entry point methods that can be run from the command line? (Choose all that apply.)
 - A. `private static void main(String[] args)`
 - B. `public static final main(String[] args)`
 - C. `public void main(String[] args)`
 - D. `public static final void main(String[] args)`
 - E. `public static void main(String[] args)`
 - F. `public static main(String[] args)`
2. Which answer options represent the order in which the following statements can be assembled into a program that will compile successfully? (Choose all that apply.)

X: `class Rabbit {}`
Y: `import java.util.*;`
Z: `package animals;`

 - A. X, Y, Z
 - B. Y, Z, X
 - C. Z, Y, X
 - D. Y, X
 - E. Z, X
 - F. X, Z
 - G. None of the above
3. Which of the following are true? (Choose all that apply.)

```
public class Bunny {  
    public static void main(String[] x) {  
        Bunny bun = new Bunny();  
    } }
```

 - A. Bunny is a class.
 - B. bun is a class.
 - C. main is a class.
 - D. Bunny is a reference to an object.
 - E. bun is a reference to an object.
 - F. main is a reference to an object.
 - G. The `main()` method doesn't run because the parameter name is incorrect.

4. 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_`

5. Which statements about the following program are correct? (Choose all that apply.)

```
2: public class Bear {  
3:     private Bear pandaBear;  
4:     private void roar(Bear b) {  
5:         System.out.println("Roar!");  
6:         pandaBear = b;  
7:     }  
8:     public static void main(String[] args) {  
9:         Bear brownBear = new Bear();  
10:        Bear polarBear = new Bear();  
11:        brownBear.roar(polarBear);  
12:        polarBear = null;  
13:        brownBear = null;  
14:        System.gc(); } }
```

A. The object created on line 9 is eligible for garbage collection after line 13.
B. The object created on line 9 is eligible for garbage collection after line 14.
C. The object created on line 10 is eligible for garbage collection after line 12.
D. The object created on line 10 is eligible for garbage collection after line 13.
E. Garbage collection is guaranteed to run.
F. Garbage collection might or might not run.
G. The code does not compile.

6. Assuming the following class compiles, how many variables defined in the class or method are in scope on the line marked on line 14?

```
1: public class Camel {  
2:     { int hairs = 3_000_0; }  
3:     long water, air=2;  
4:     boolean twoHumps = true;  
5:     public void spit(float distance) {  
6:         var path = "";
```

```

7:      { double teeth = 32 + distance++; }
8:      while(water > 0) {
9:          int age = twoHumps ? 1 : 2;
10:         short i=-1;
11:         for(i=0; i<10; i++) {
12:             var Private = 2;
13:         }
14:         // SCOPE
15:     }
16: }
17: }

```

- A. 2
- B. 3
- C. 4
- D. 5
- E. 6

F. 7

G. None of the above

7. Which are true about this code? (Choose all that apply.)

```

public class KitchenSink {
    private int numForks;

    public static void main(String[] args) {
        int numKnives;
        System.out.print("""
            "# forks = " + numForks +
            " # knives = " + numKnives +
            # cups = 0""");
    }
}

```

- A. The output includes: # forks = 0.
- B. The output includes: # knives = 0.
- C. The output includes: # cups = 0.
- D. The output includes a blank line.
- E. The output includes one or more lines that begin with whitespace.
- F. The code does not compile.

8. 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 = Integer.valueOf(3);`
 - E. `var day = 1/0;`
 - F. `var winter = 12, cold;`
 - G. `var fall = 2, autumn = 2;`
 - H. `var morning = ""; morning = null;`
9. 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. A local variable of type `double` defaults to 0.0.
 - D. A local variable of type `int` defaults to `null`.
 - E. A class variable of type `String` defaults to `null`.
 - F. A class variable of type `String` defaults to the empty string `""`.
 - G. None of the above.
10. Which of the following expressions, when inserted independently into the blank line, allow the code to compile? (Choose all that apply.)
- ```
public void printMagicData() {
 var 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`
11. Given the following two class files, what is the maximum number of imports that can be removed and have the code still compile?

```
// Water.java
package aquarium;
public class Water { }
```

```
// Tank.java
package aquarium;
import java.lang.*;
import java.lang.System;
import aquarium.Water;
import aquarium.*;
public class Tank {
 public void print(Water water) {
 System.out.println(water); } }
```

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4**
- F. Does not compile

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

```
1: public class ClownFish {
2: int gills = 0, double weight=2;
3: { int fins = gills; }
4: void print(int length = 3) {
5: System.out.println(gills);
6: System.out.println(weight);
7: System.out.println(fins);
8: System.out.println(length);
9: } }
```

- A. Line 2 generates a compiler error.**
- B. Line 3 generates a compiler error.
- C. Line 4 generates a compiler error.**
- D. Line 7 generates a compiler error.**
- E. The code prints 0.
- F. The code prints 2.0.
- G. The code prints 2.
- H. The code prints 3.

13. Given the following classes, which of the following snippets can independently be inserted in place of `INSERT IMPORTS HERE` and have the code compile? (Choose all that apply.)

```
package aquarium;
public class Water {
 boolean salty = false;
}
```

```
package aquarium.jellies;
public class Water {
 boolean salty = true;
}
```

```
package employee;
INSERT IMPORTS HERE
public class WaterFiller {
 Water water;
}
```

- A. `import aquarium.*;`
- B. `import aquarium.Water;`  
`import aquarium.jellies.*;`
- C. `import aquarium.*;`  
`import aquarium.jellies.Water;`
- D. `import aquarium.*;`  
`import aquarium.jellies.*;`
- E. `import aquarium.Water;`  
`import aquarium.jellies.Water;`
- F. None of these imports can make the code compile.

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

```
3: short numPets = 5L;
4: int numGrains = 2.0;
5: String name = "Scruffy";
6: int d = numPets.length();
7: int e = numGrains.length;
8: int f = name.length();
```

- A. Line 3 generates a compiler error.
  - B. Line 4 generates a compiler error.
  - C. Line 5 generates a compiler error.
  - D. Line 6 generates a compiler error.
  - E. Line 7 generates a compiler error.
  - F. Line 8 generates a compiler error.
15. 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.
16. Which are true about this code? (Choose all that apply.)
- ```
var blocky = ""  
    squirrel \s  
    pigeon  \  
    termite"";  
System.out.print(blocky);
```
- A. It outputs two lines.
 - B. It outputs three lines.
 - C. It outputs four lines.
 - D. There is one line with trailing whitespace.
 - E. There are two lines with trailing whitespace.
 - F. If we indented each line five characters, it would change the output.
17. 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

18. Which of the following statements about `var` are true? (Choose all that apply.)

- A. A `var` can be used as a constructor parameter.
- B. The type of a `var` is known at compile time.
- C. A `var` cannot be used as an instance variable.
- D. A `var` can be used in a multiple variable assignment statement.
- E. The value of a `var` cannot change at runtime.
- F. The type of a `var` cannot change at runtime.
- G. The word `var` is a reserved word in Java.

19. Which are true about the following code? (Choose all that apply.)

```
var num1 = Long.parseLong("100");
var num2 = Long.valueOf("100");
System.out.println(Long.max(num1, num2));
```

- A. The output is 100.
- B. The output is 200.
- C. The code does not compile.
- D. num1 is a primitive.
- E. num2 is a primitive.

20. 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.

21. What is the output of executing the following class?

```
1: public class Salmon {
2: int count;
3: { System.out.print(count+"-"); }
4: { count++; }
5: public Salmon() {
6: count = 4;
7: System.out.print(2+"-");
8: }
9: public static void main(String[] args) {
10: System.out.print(7+"-");
11: var s = new Salmon();
12: System.out.print(s.count+"-"); } }
```

- A. 7-0-2-1-
- B. 7-0-1-
- C. 0-7-2-1-
- D. 7-0-2-4-
- E. 0-7-1-
- F. The class does not compile because of line 3.
- G. The class does not compile because of line 4.
- H. None of the above.

22. Given the following class, which of the following lines of code can independently replace INSERT CODE HERE to make the code compile? (Choose all that apply.)

```
public class Price {
 public void admission() {
 INSERT CODE HERE
 System.out.print(amount);
 }
}
```

- A. `int Amount = 0b11;`
- B. `int amount = 9L;`
- C. `int amount = 0xE;`
- D. `int amount = 1_2.0;`
- E. `double amount = 1_0_.0;`
- F. `int amount = 0b101;`
- G. `double amount = 9_2.1_2;`
- H. `double amount = 1_2_.0_0;`

23. 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.