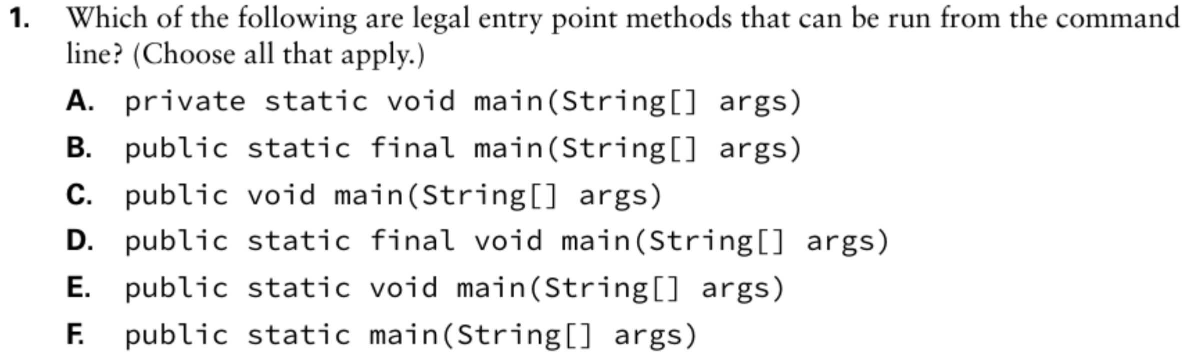
Review Questions Semana 1

Chapter 1

Building Blocks



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)`

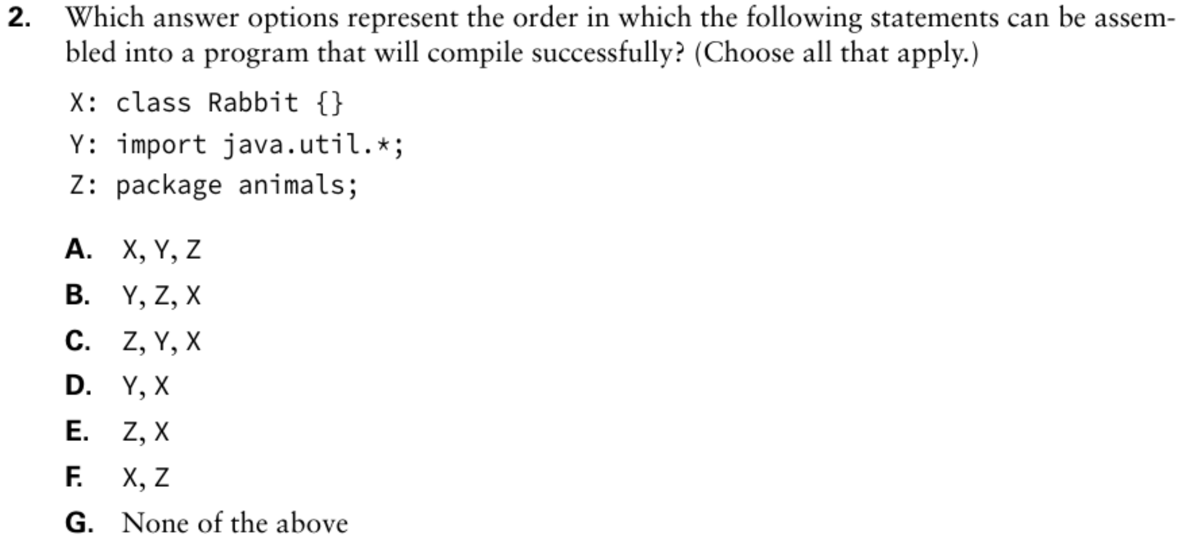
   C. `public void main(String[] args)`

   D. `public static final void main(String[] args)`

   E. `public static void main(String[] args)`

   F. `public static main(String[] args)`

D,E: “E” es el estándar, «final» en “D” es redundante pero aceptable. Las demás opciones son incorrectas porque main debe ser public, static y void.



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

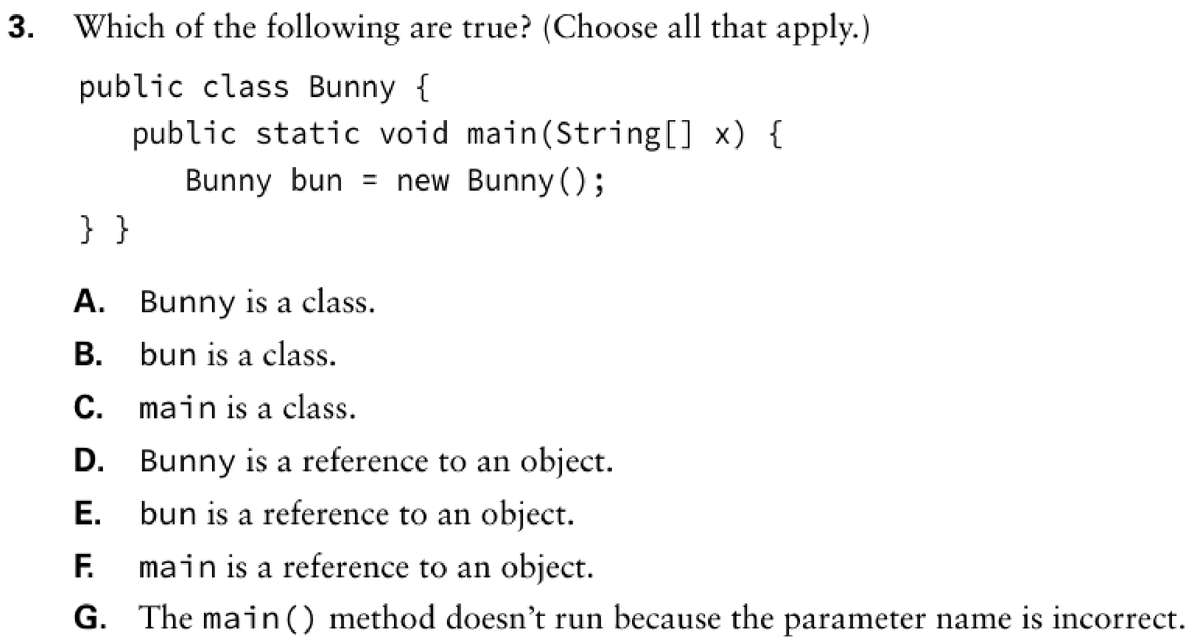
   D. Y, X

   E. Z, X

   F. X, Z

   G. None of the above

C,D,E: “C” porque primero van los paquetes (package), luego van las importaciones (import) y luego las clases (class). El paquete y los imports son opcionales así que “D” y “E” también son correctos.



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.

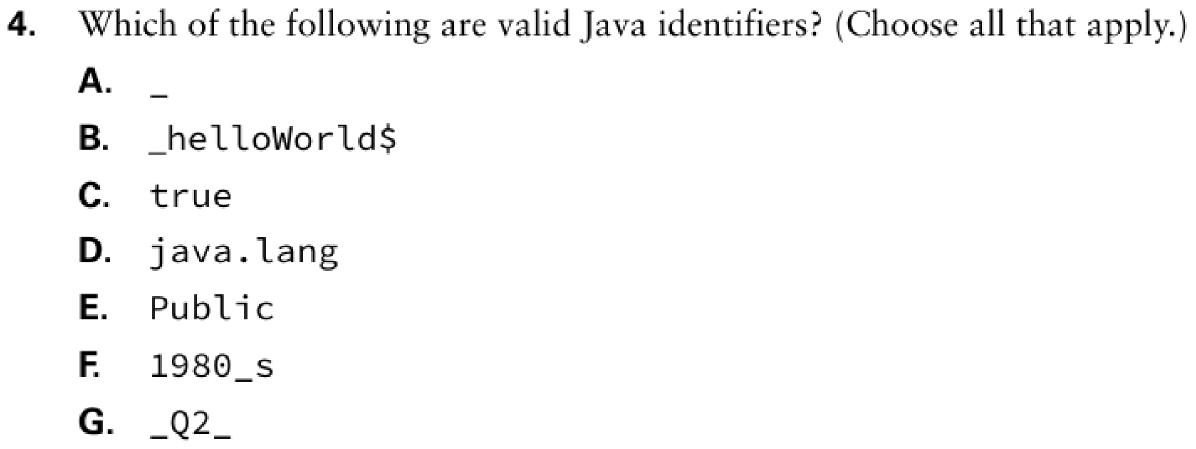
D. `Bunny` is a reference to an object.

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.

A, E: "Bunny" es una clase pública, "bun" es una referencia a un objeto



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

A. `_`

B. `_helloWorld$`

C. `true`

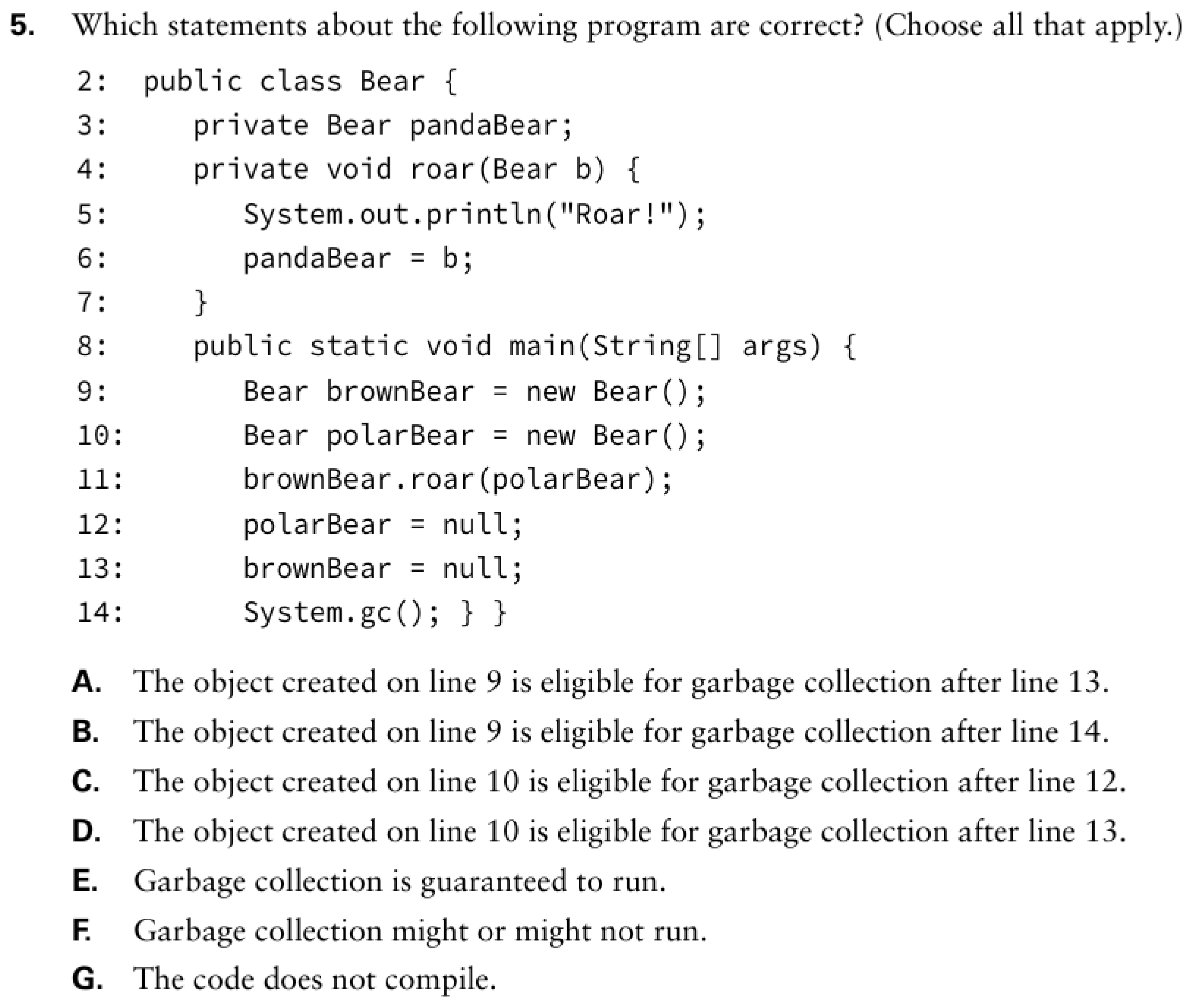
D. `java.lang`

E. `Public`

F. `1980_s`

G. `_Q2_`

B,E,G: No es válido usar el guión bajo sólo, «true» por ser una palabra reservada, el uso del "." ni empezar el identificador con un número



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.

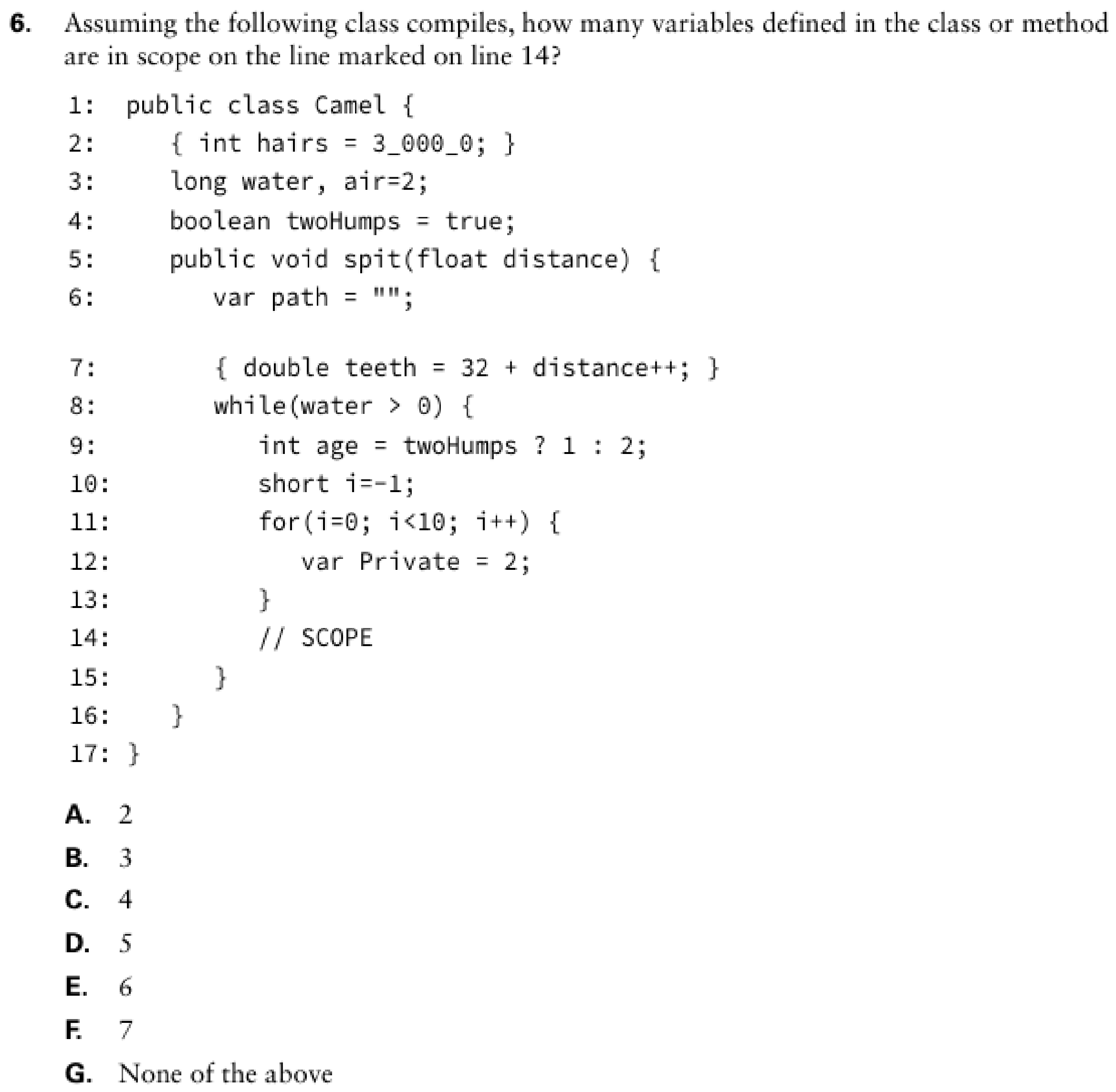
D. The object created on line 10 is eligible for garbage collection after line 13.

E. Garbage collection is guaranteed to run.

F. Garbage collection might or might not run.

G. The code does not compile.

A,D,F: El objeto Bear de “brownBear” es elegible para garbage collection a partir de la línea 13 y como en línea 11 se dictó que “pandaBear” de “brownBear” apuntará al objeto de “polarBear”, haciendo imposible llegar a cualquiera de los objetos creados cuando “brownBear = null”. El llamado a garbage collection no garantiza que se ejecute



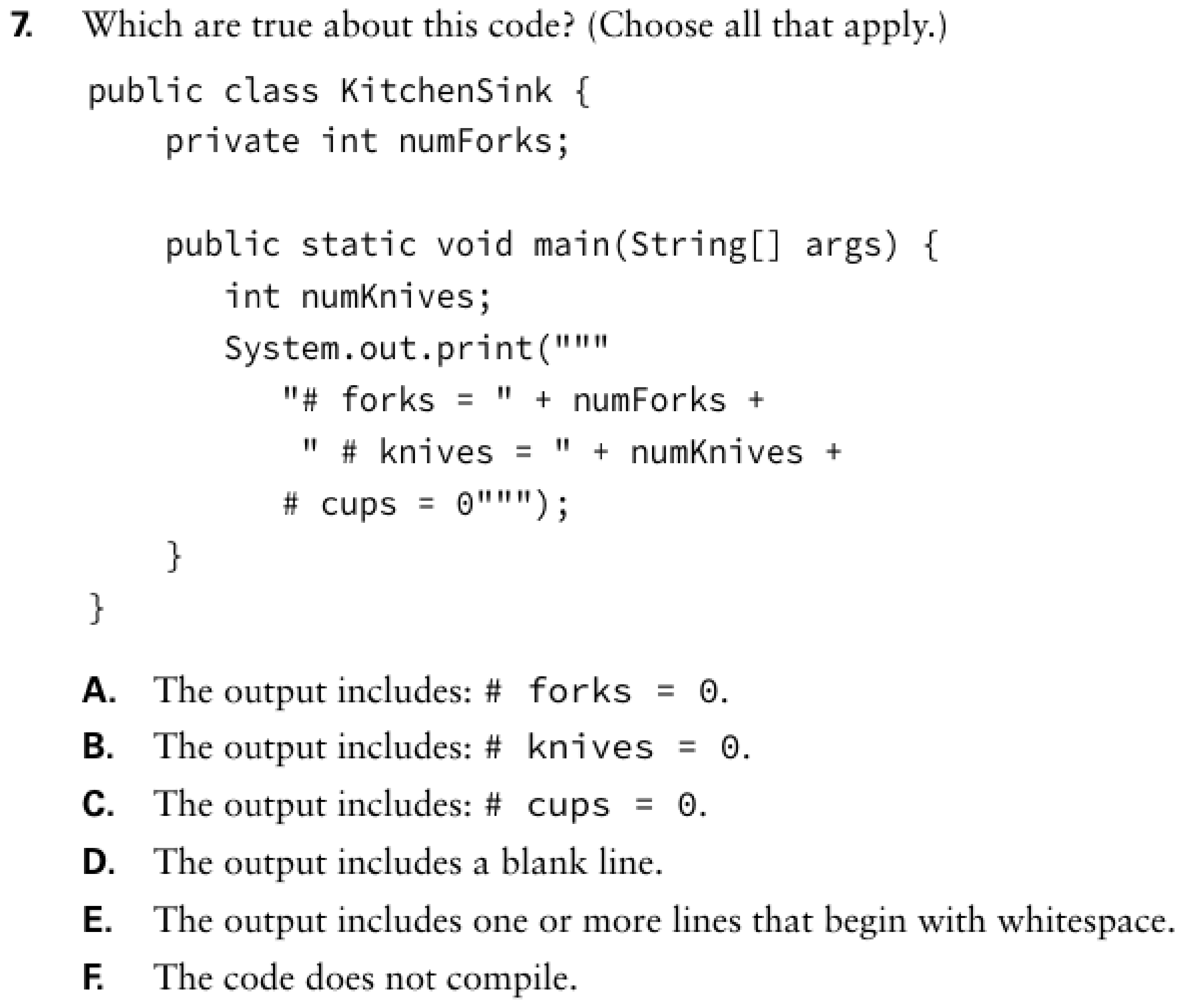
6. Assuming the following class compiles, how many variables defined in the class or method are in scope on the line marked on line 14?

```
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

F: En línea 3 hay dos variables, en línea 4 una variable, en línea 5 una variable, en línea 6 una variable, en línea 9 una variable, en línea 10 una variable. Un total de 7 variables. Las variables en las llaves (líneas 2 y 7) solo existen en esa línea de código, la variable en línea 12 sólo existe dentro del for



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`.

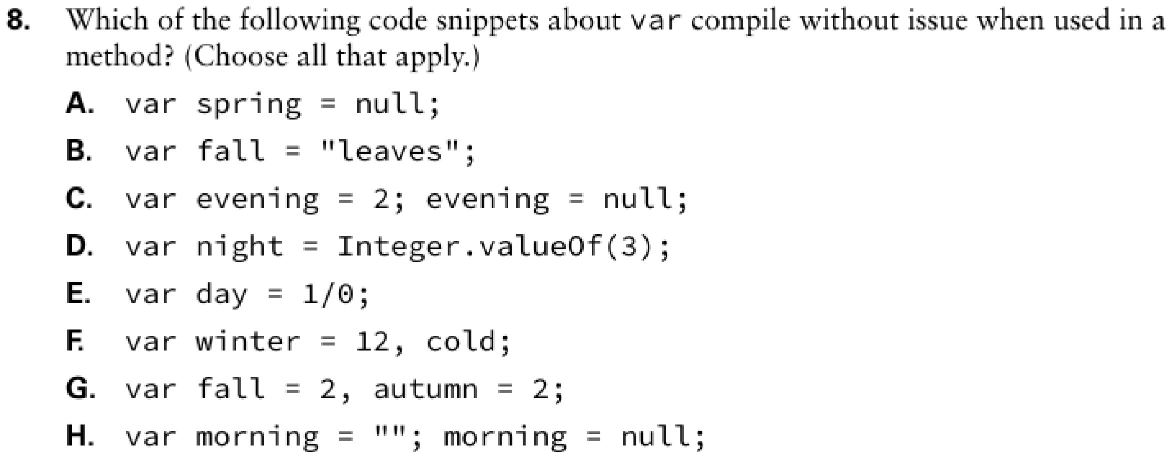
C. The output includes: `# cups = 0`.

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.

C,E



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);`

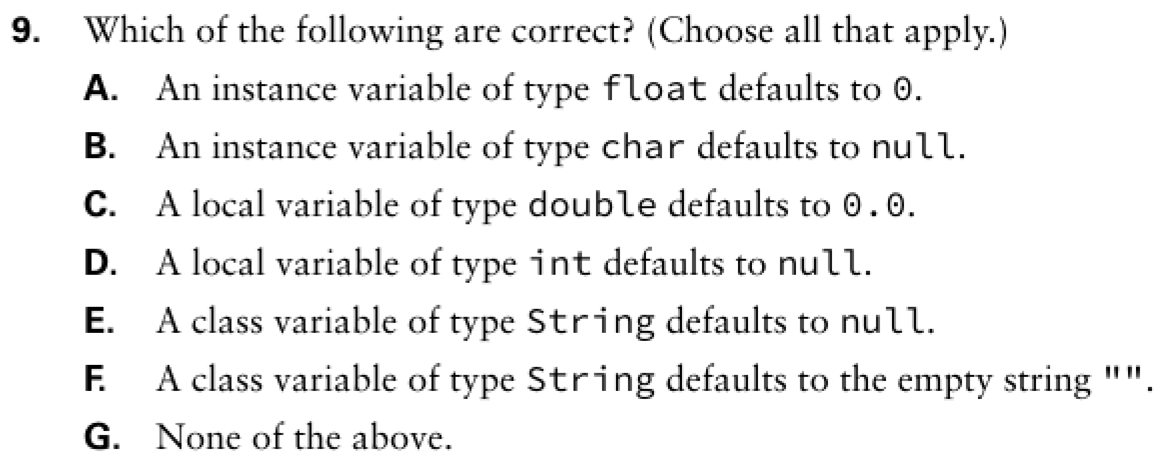
E. `var day = 1/0;`

F. `var winter = 12, cold;`

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

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

B,D,E,H: “B” y “D” son inicializados correctamente como «String» e «Integer», respectivamente. “H” se inicializa como vacío y después se le asigna el «null», lo cual es correcto.



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`.

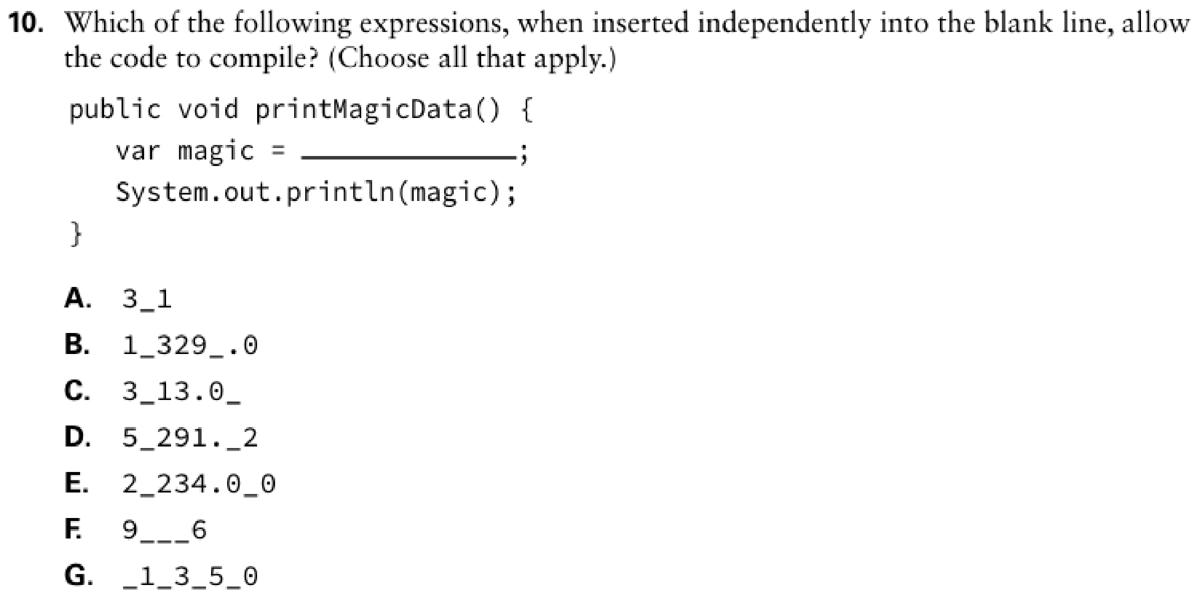
C. A local variable of type `double` defaults to `0.0`.

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_`

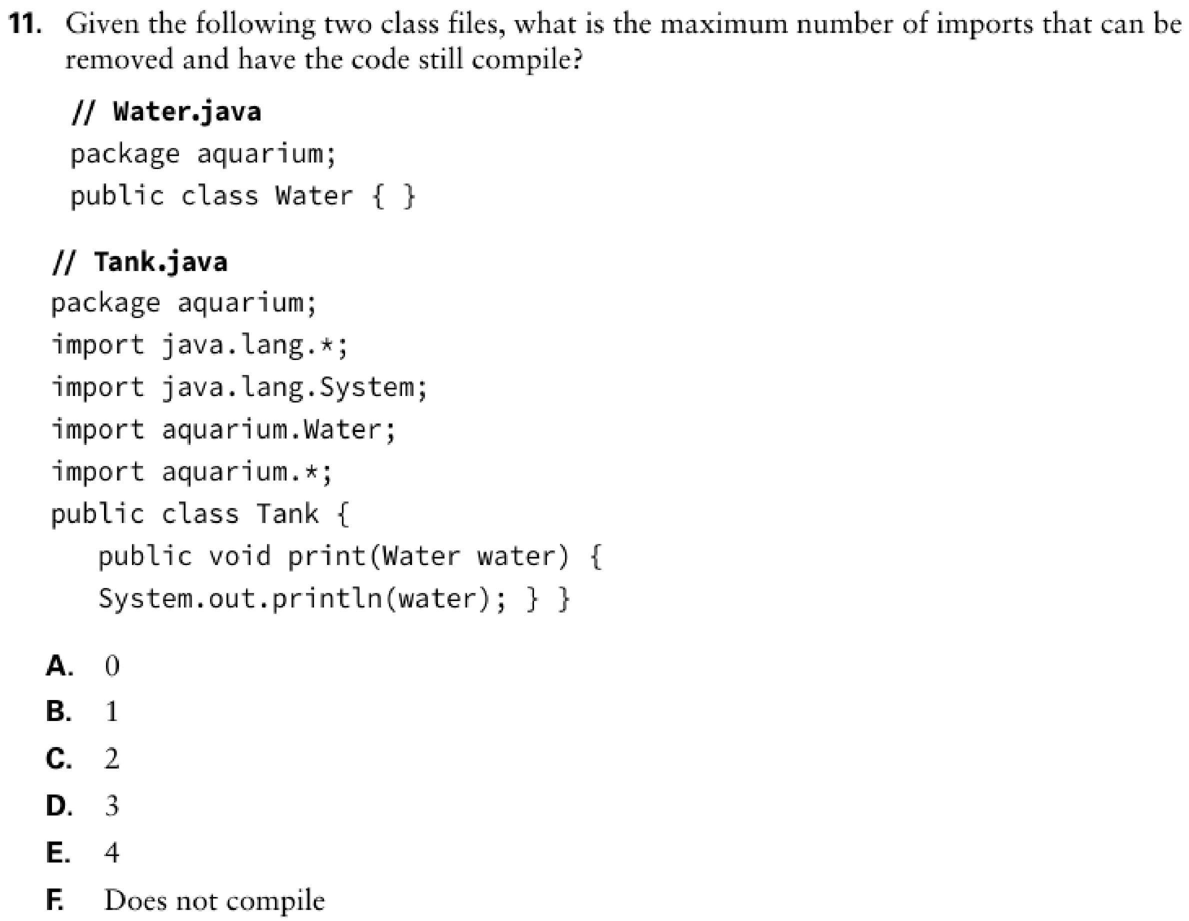
D. `5_291._2`

E. `2_234.0_0`

F. `9___6`

G. `_1_3_5_0`

A,E,F: No se puede poner "." antes o después de un "_" y este último no puede ir al principio o al final de la expresión



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

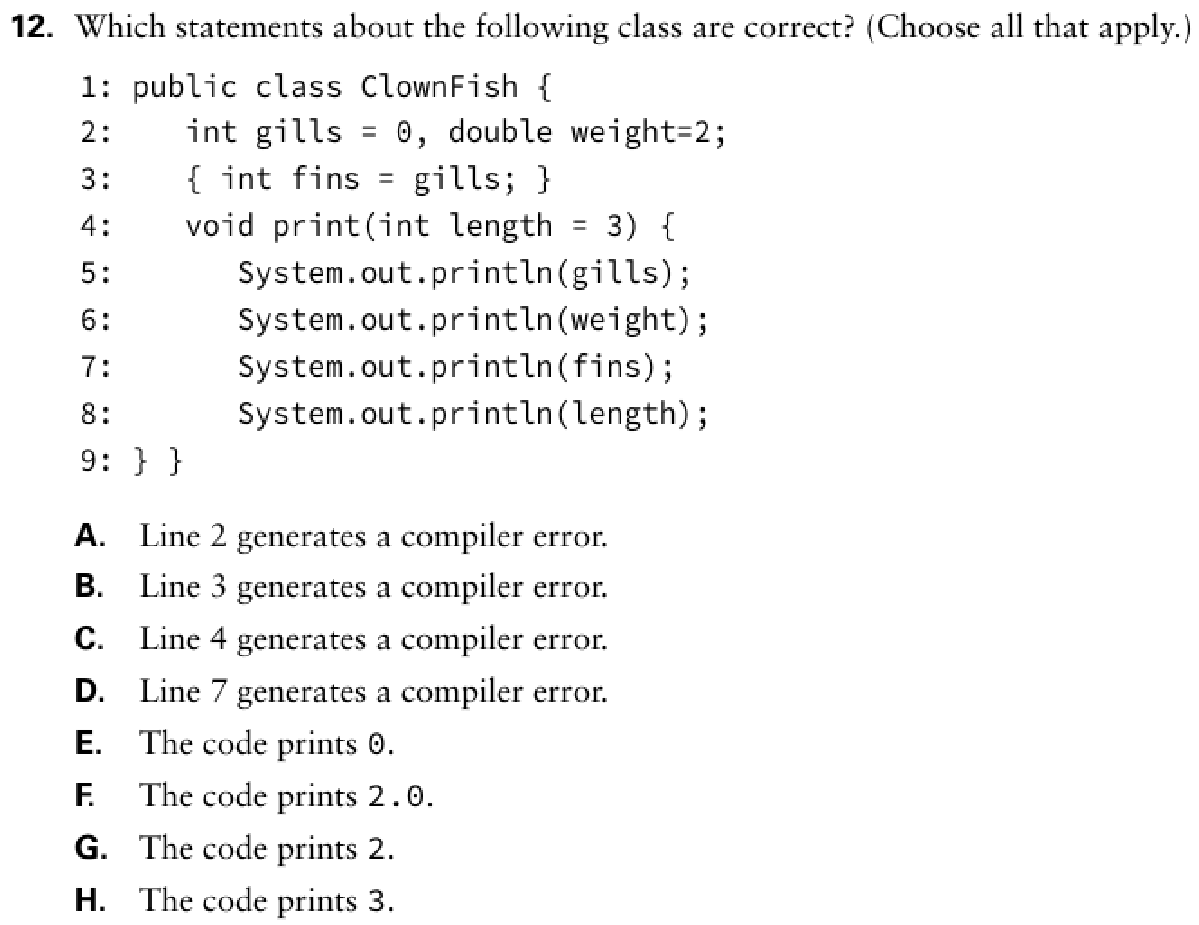
C. 2

D. 3

E. 4

F. Does not compile

E: Los 4 imports pueden eliminarse y el código compilará sin problemas



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.

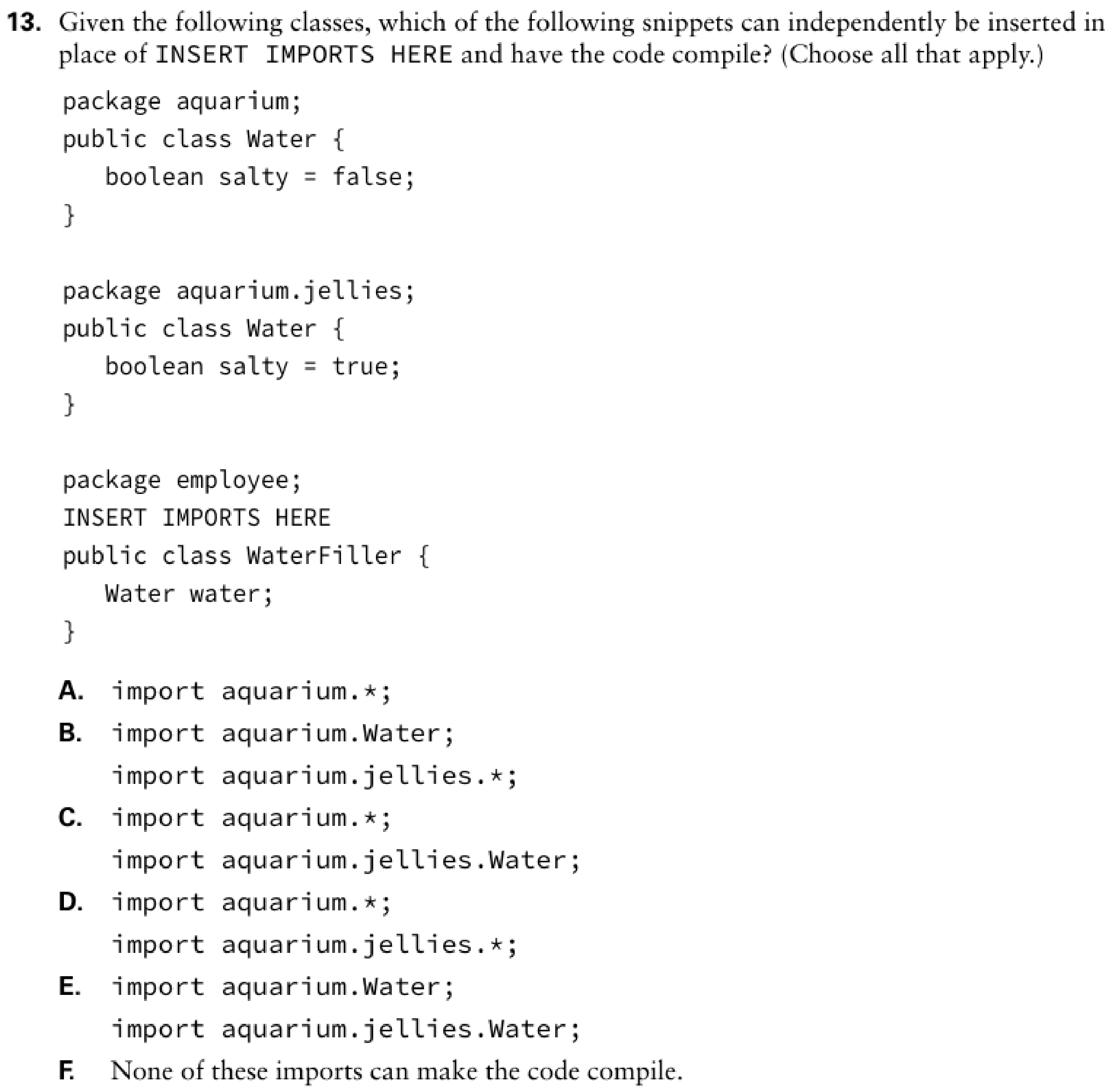
E. The code prints `0`.

F. The code prints `2.0`.

G. The code prints 2.

H. The code prints `3`.

A,C,D: “A”: No se pueden declarar dos tipos diferentes de variables en la misma línea. “C”: No se puede declarar valores de parámetros dentro de métodos. “D”: La variable “fins” solo existe en la línea 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.*;`

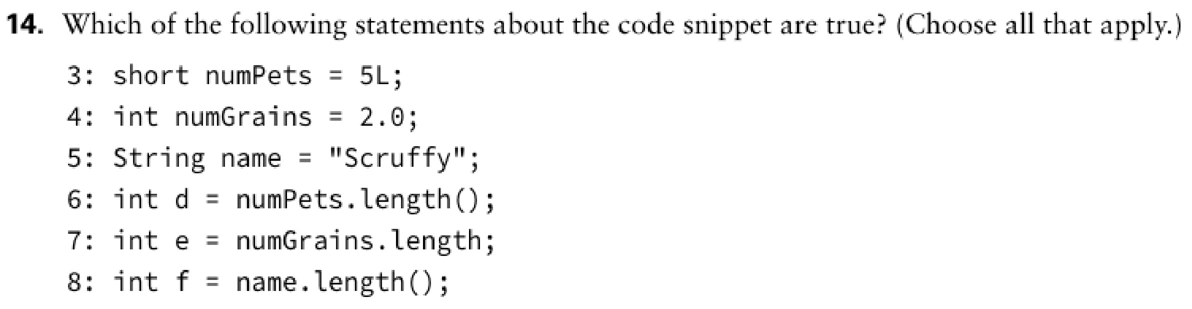
C. `import aquarium.*;`
`import aquarium.jellies.Water;`

D. `import aquarium.*;`
`import aquarium.jellies.*;`

E. `import aquarium.Water;`
`import aquarium.jellies.Water;`

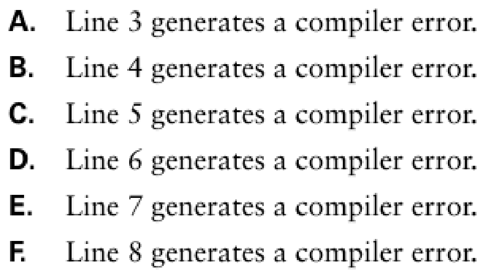
F. None of these imports can make the code compile.

A,B,C: “A” importa todas las clases en el paquete, “B” y “C” importan correctamente la clase “Water”, “E” es incorrecta porque importa “Water” dos veces



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.

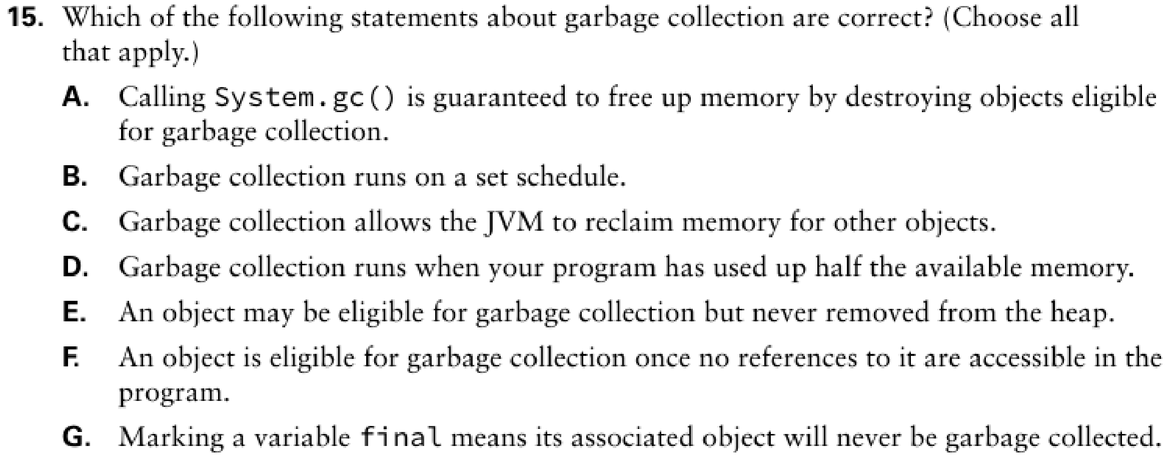
C. Line 5 generates a compiler error.

D. Line 6 generates a compiler error.

E. Line 7 generates a compiler error.

F. Line 8 generates a compiler error.

A,B,D,E: Las declaraciones de los valores de todas las variables especificadas son incorrectas



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.

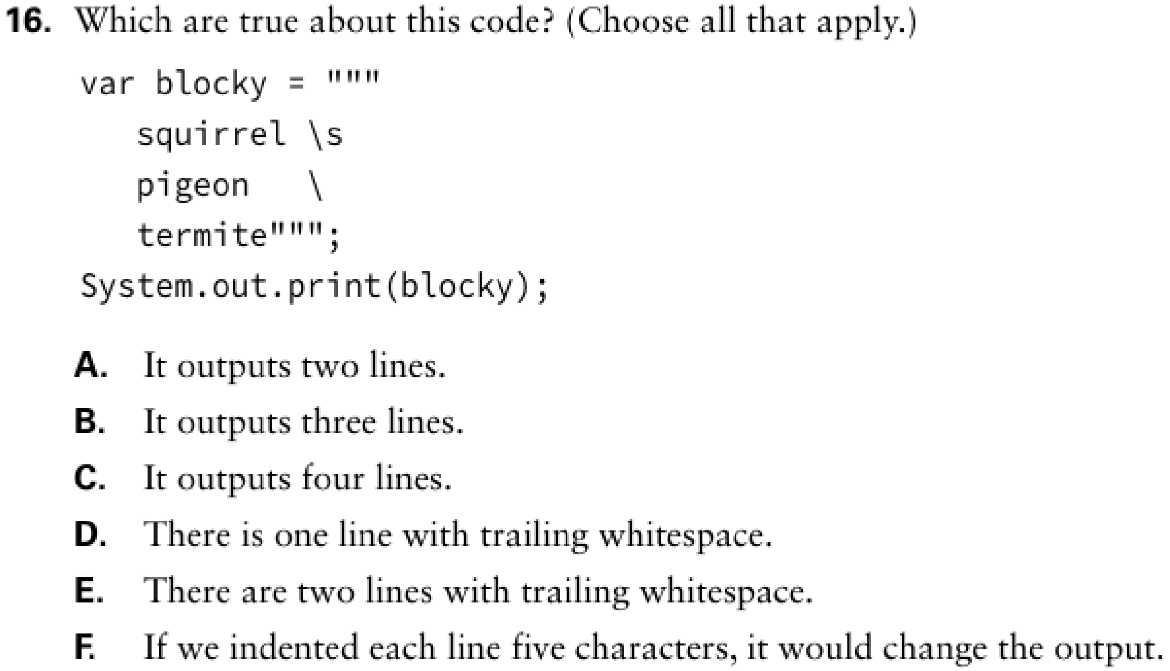
D. Garbage collection runs when your program has used up half the available memory.

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.

C,E,F: JVM puede reclamar memoria para otros objetos y GC elegirá un objeto que no sea referenciado ni una vez y hasta que el programa termine



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.

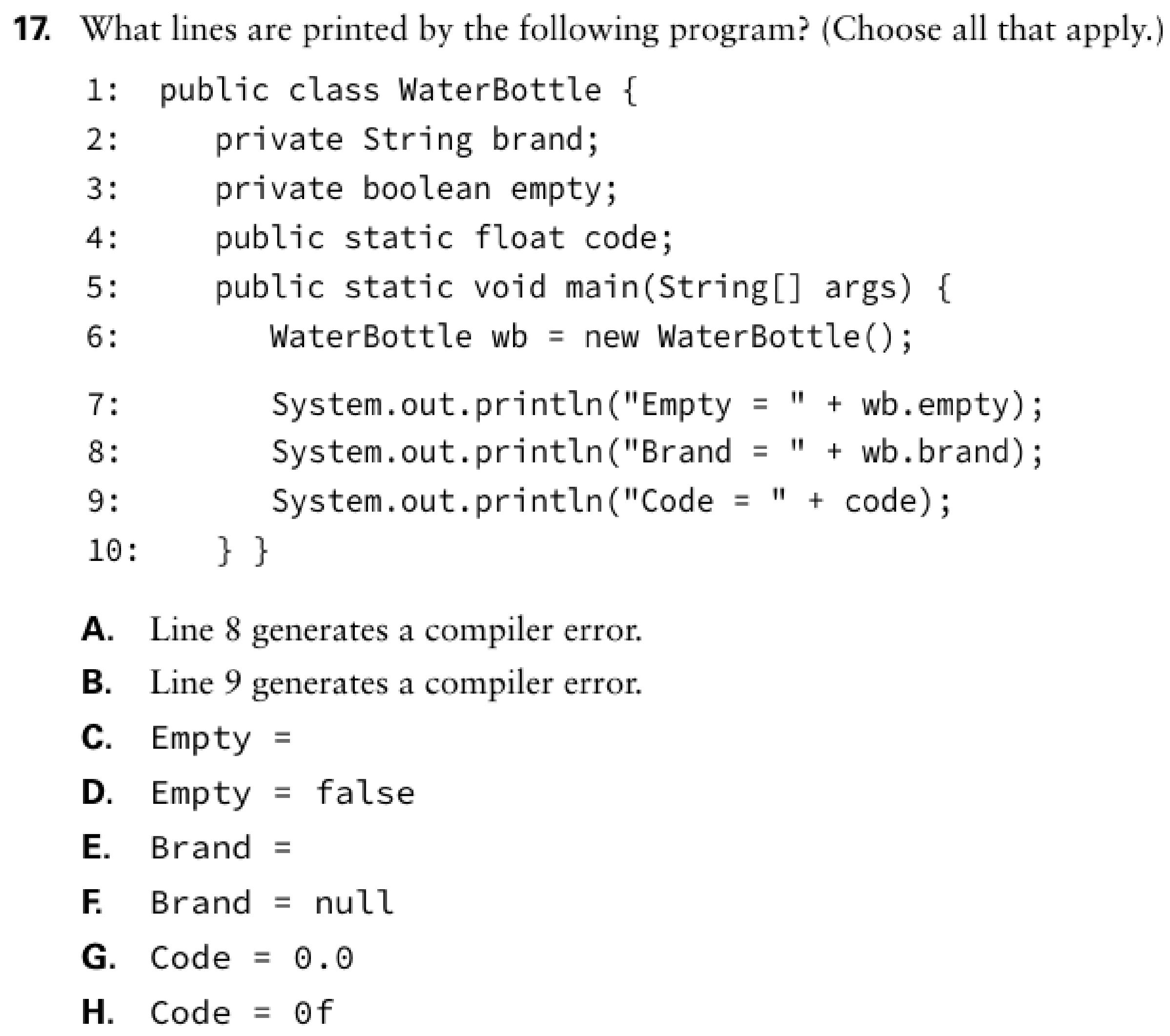
C. It outputs four lines.

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.

A,D,F



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`

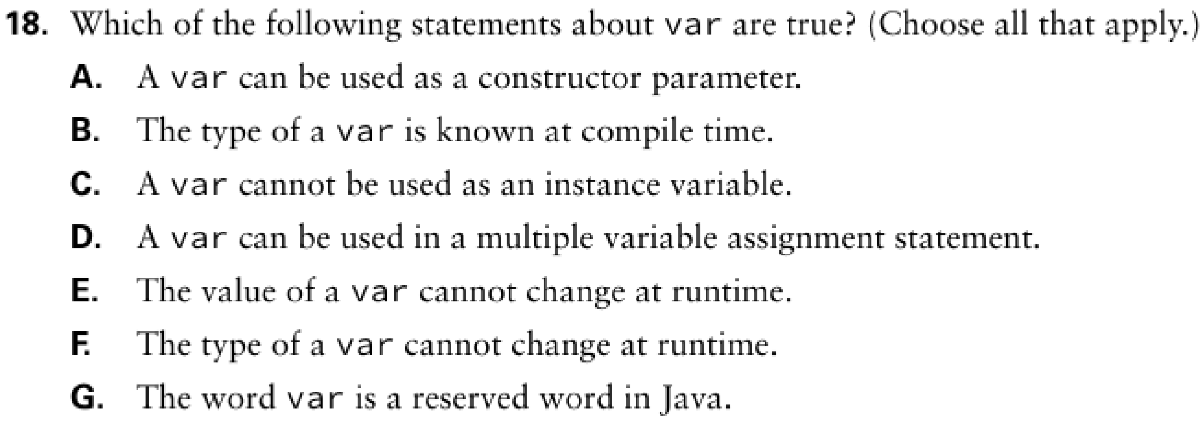
E. `Brand =`

F. `Brand = null`

G. `Code = 0.0`

H. `Code = 0f`

D,F,G: Por default los «boolean» se inicializan con «false», los «String» con «null» y los «float» con «0.0»



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.

B,C,F

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.

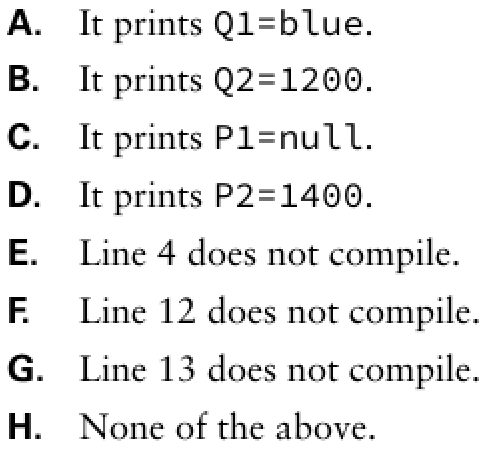
D. `num1` is a primitive.

E. `num2` is a primitive.

A,D

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

```
public class PoliceBox {
   String color;
   long age;
   public void PoliceBox() {
      color = "blue";
      age = 1200;
   }
   public static void main(String []time) {
      var p = new PoliceBox();
      var q = new PoliceBox();
      p.color = "green";
      p.age = 1400;
      p = q;
      System.out.println("Q1="+q.color);
      System.out.println("Q2="+q.age);
      System.out.println("P1="+p.color);
      System.out.println("P2="+p.age);
} }
```



A. It prints `Q1=blue`.

B. It prints `Q2=1200`.

C. It prints `P1=null`.

D. It prints `P2=1400`.

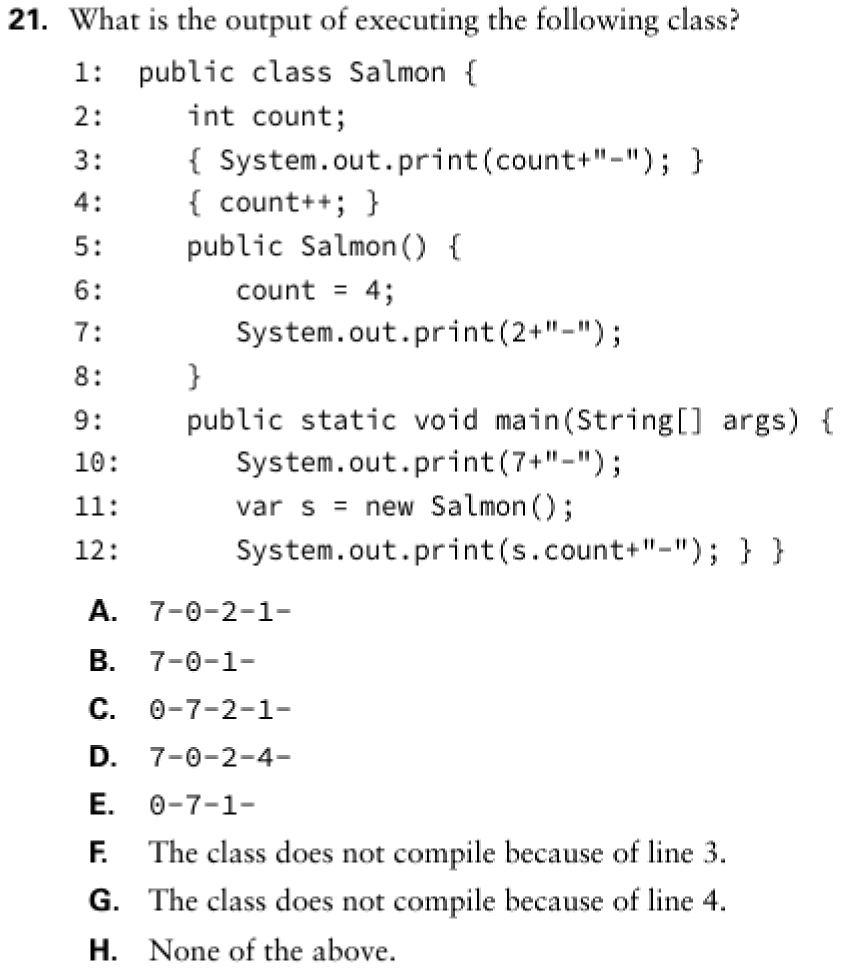
E. Line 4 does not compile.

F. Line 12 does not compile.

G. Line 13 does not compile.

H. None of the above.

C: P1 es nulo porque “p = q” hace que apunte a valores nulos



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-`

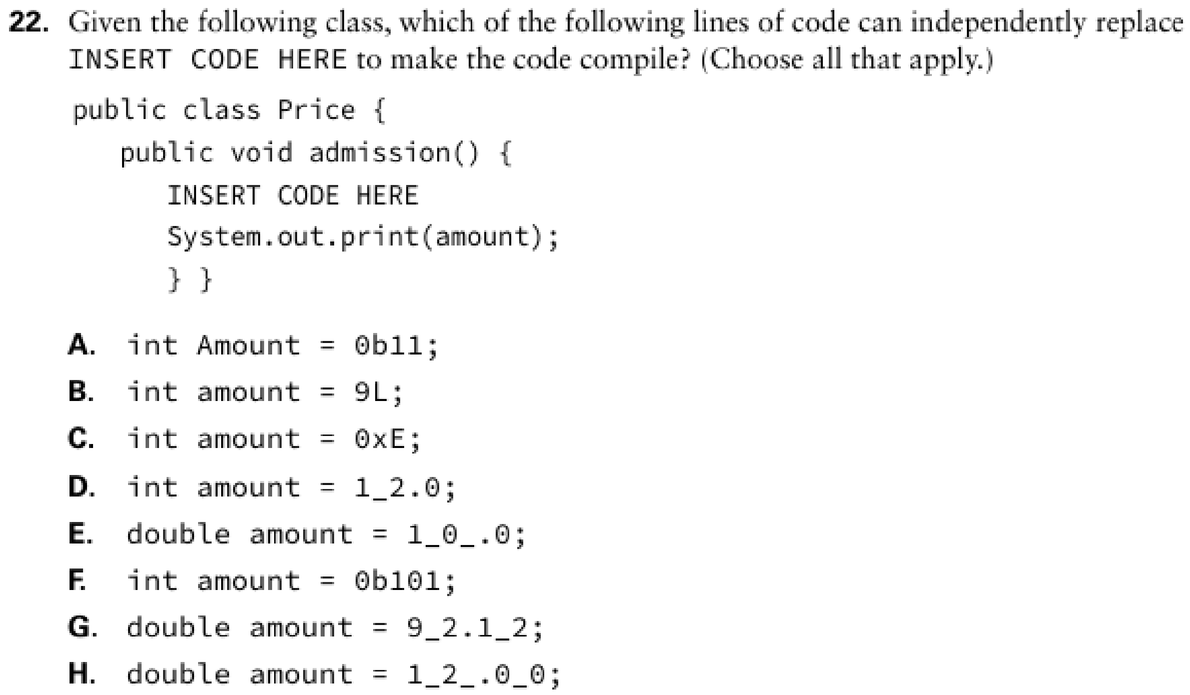
E. `0-7-1-`

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.

D: Primero se imprime 7 del método main, luego se crea “Salmon” que inicializa “count” con un valor default de 0 y lo imprime para después incrementarlo en 1, posteriormente se llama al constructor para que “count = 4” e imprimir 2 y por último imprimir ese 4 en el método main en línea 12



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;`

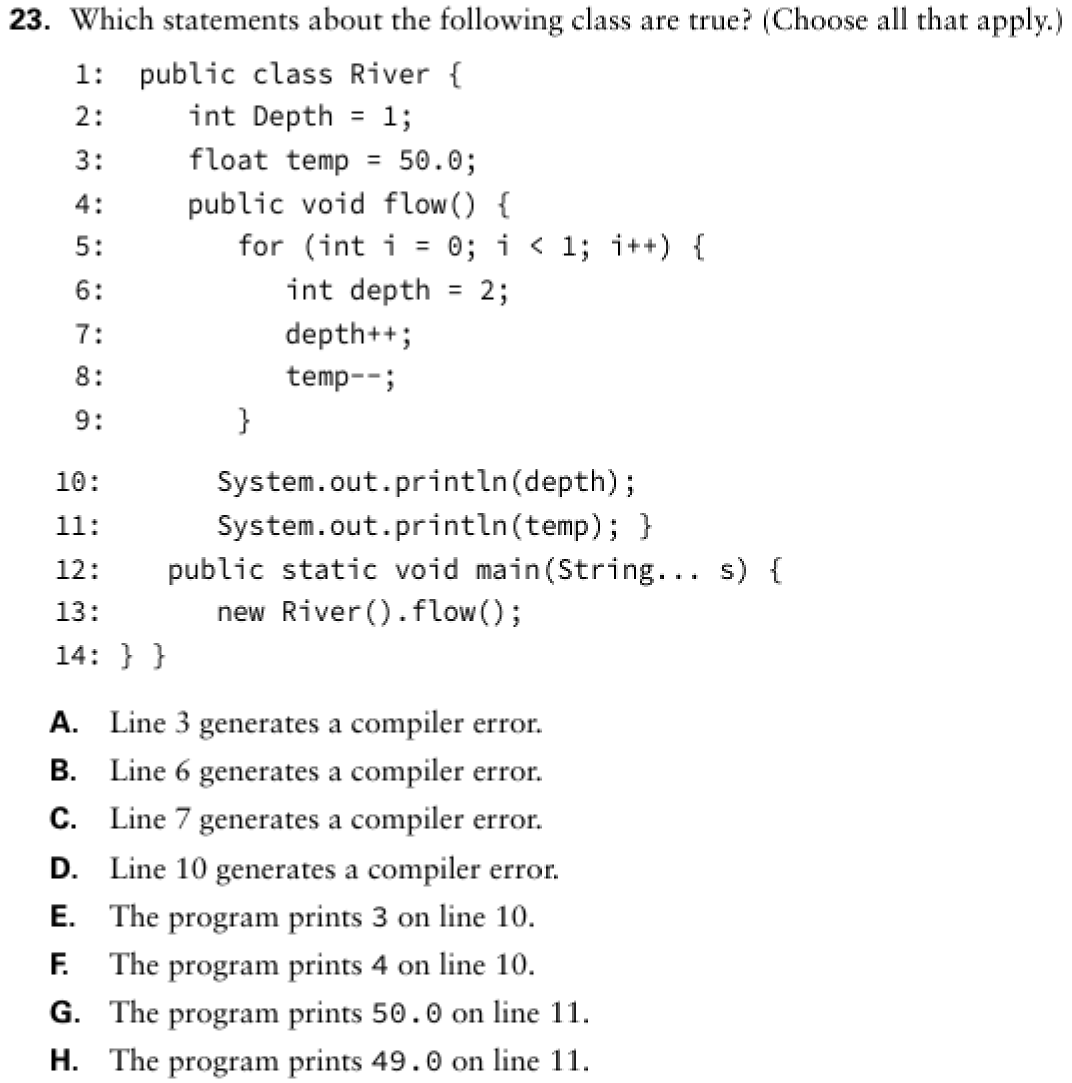
E. `double amount = 1_0_.0;`

F. `int amount = 0b101;`

G. `double amount = 9_2.1_2;`

H. `double amount = 1_2_.0_0;`

A,B,C,D,F,G



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.

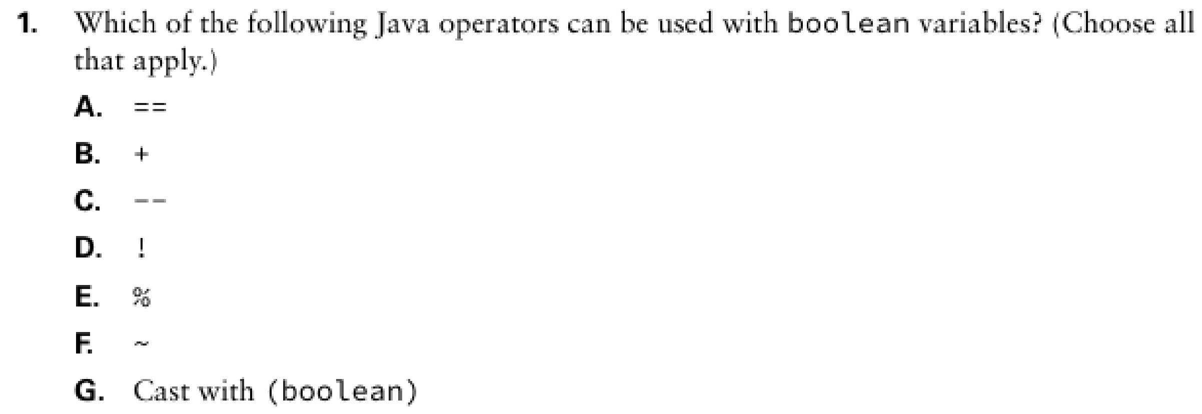
G. The program prints `50.0` on line 11.

H. The program prints `49.0` on line 11.

A,D: «float» debe llevar el sufijo f (o F) al declarar, “depth” solo existe dentro del «for»

Chapter 2

Operators



1. Which of the following Java operators can be used with `boolean` variables? (Choose all that apply.)

   A. `==`

   B. `+`

   C. `--`

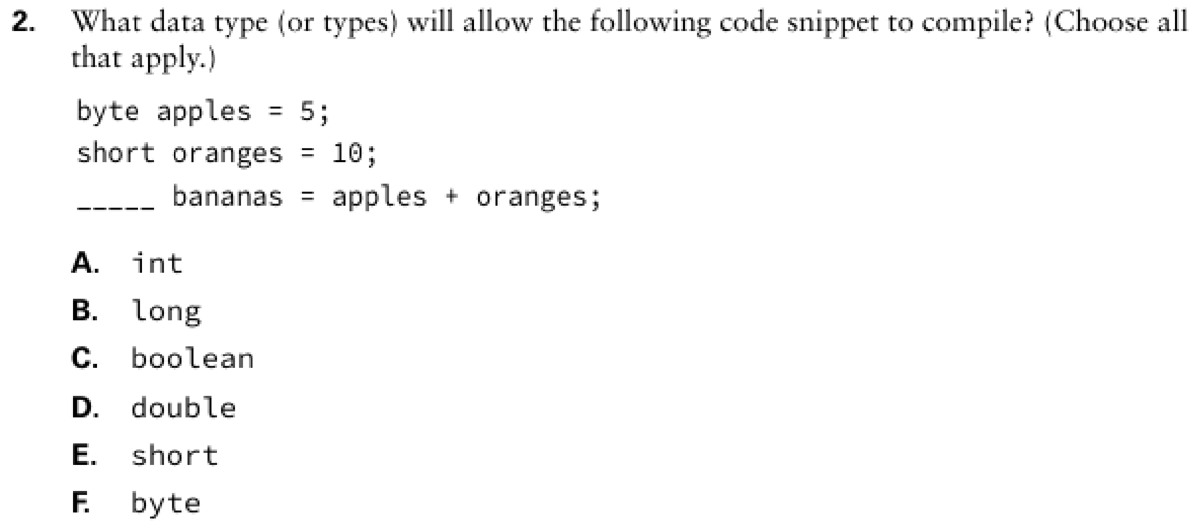
   D. `!`

   E. `%`

   F. `~`

   G. Cast with `(boolean)`

A,D,G



2. What data type (or types) will allow the following code snippet to compile? (Choose all that apply.)

```
byte apples = 5;
short oranges = 10;
_____ bananas = apples + oranges;
```

   A. `int`

   B. `long`

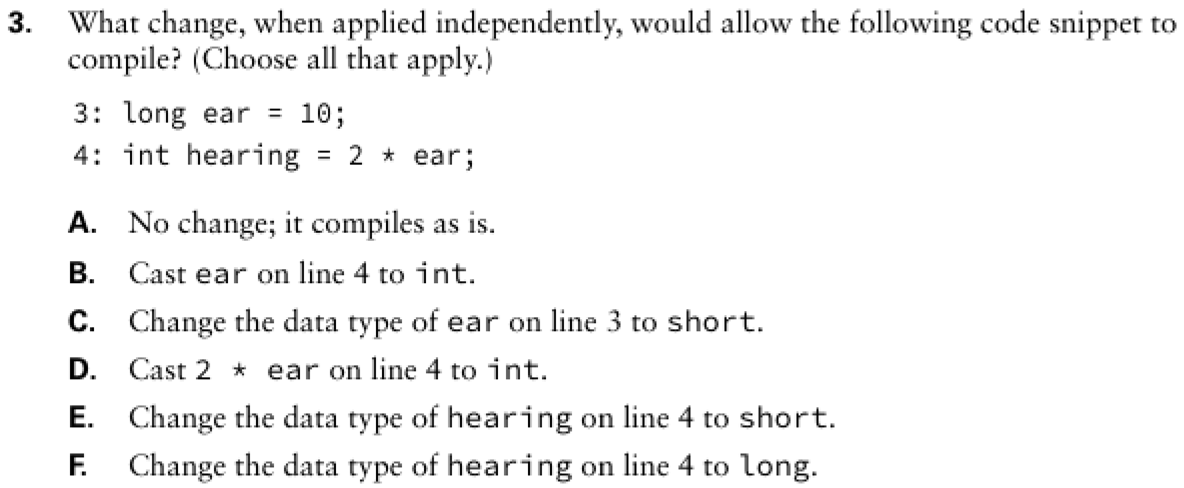
   C. `boolean`

   D. `double`

   E. `short`

   F. `byte`

A,B,D



3. What change, when applied independently, would allow the following code snippet to compile? (Choose all that apply.)

```
3: long ear = 10;
4: int hearing = 2 * ear;
```

   A. No change; it compiles as is.

   B. Cast `ear` on line 4 to `int`.

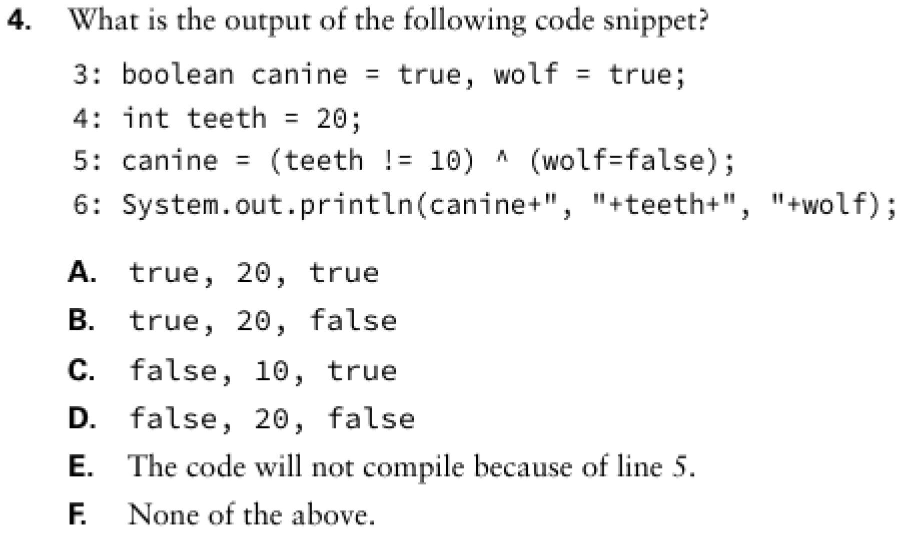
   C. Change the data type of `ear` on line 3 to `short`.

   D. Cast `2 * ear` on line 4 to `int`.

   E. Change the data type of `hearing` on line 4 to `short`.

   F. Change the data type of `hearing` on line 4 to `long`.

B,C,D,F: “ear” debe ser compatible con hearing al ser int, entonces un casteo a int o declarar “ear” como short es necesario o cambiar “hearing” a long para que ambas variables sean del mismo tipo



4. What is the output of the following code snippet?

```
3: boolean canine = true, wolf = true;
4: int teeth = 20;
5: canine = (teeth != 10) ^ (wolf=false);
6: System.out.println(canine+", "+teeth+", "+wolf);
```

A. `true, 20, true`

B. `true, 20, false`

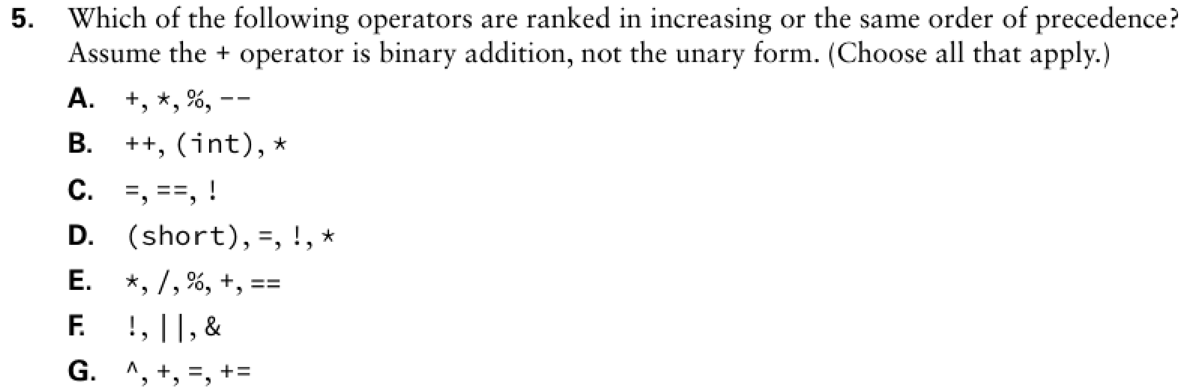
C. `false, 10, true`

D. `false, 20, false`

E. The code will not compile because of line 5.

F. None of the above.

B



5. Which of the following operators are ranked in increasing or the same order of precedence? Assume the + operator is binary addition, not the unary form. (Choose all that apply.)

A. +, *, %, --

B. ++, (int), *

C. =, ==, !

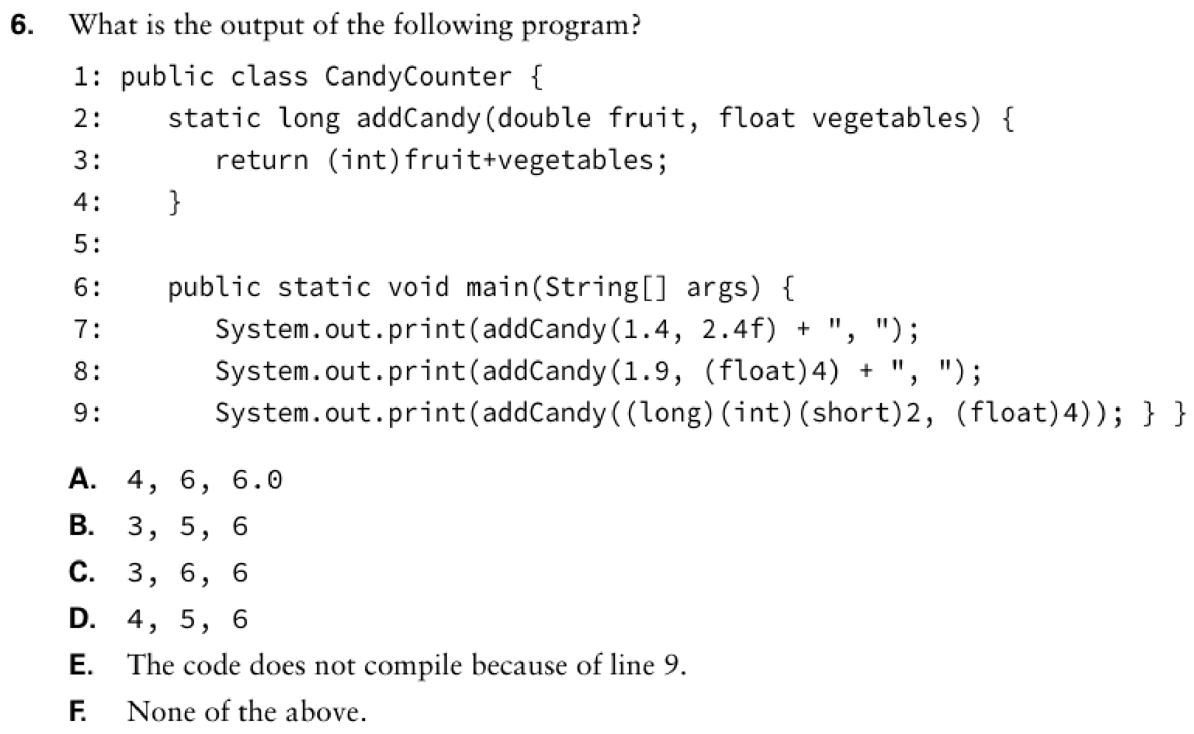
D. (short), =, !, *

E. *, /, %, +, ==

F. !, ||, &

G. ^, +, =, +=

A,C



6. What is the output of the following program?

```
1: public class CandyCounter {
2:    static long addCandy(double fruit, float vegetables) {
3:       return (int)fruit+vegetables;
4:    }
5:
6:    public static void main(String[] args) {
7:       System.out.print(addCandy(1.4, 2.4f) + ", ");
8:       System.out.print(addCandy(1.9, (float)4) + ", ");
9:       System.out.print(addCandy((long)(int)(short)2, (float)4)); } }
```

A. `4, 6, 6.0`

B. `3, 5, 6`

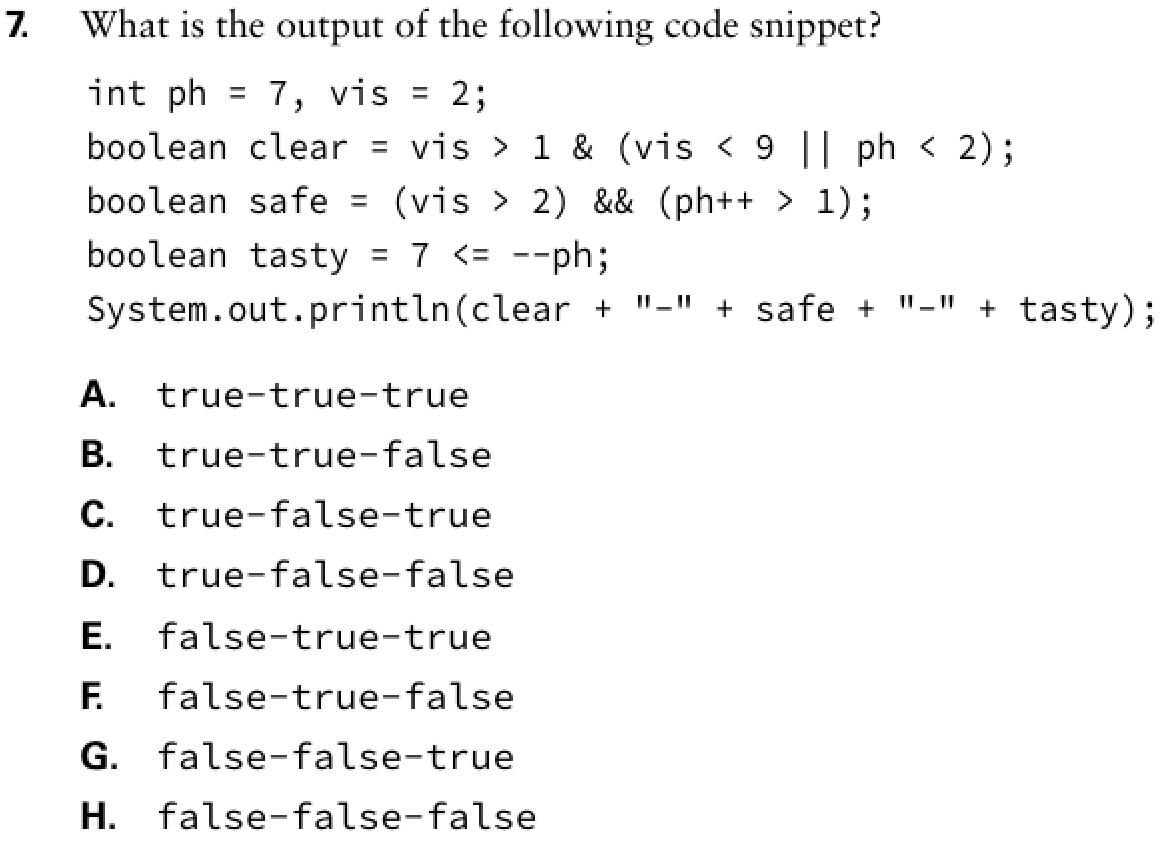
C. `3, 6, 6`

D. `4, 5, 6`

E. The code does not compile because of line 9.

F. None of the above.

F



7. What is the output of the following code snippet?

```
int ph = 7, vis = 2;
boolean clear = vis > 1 & (vis < 9 || ph < 2);
boolean safe = (vis > 2) && (ph++ > 1);
boolean tasty = 7 <= --ph;
System.out.println(clear + "-" + safe + "-" + tasty);
```

A. `true-true-true`

B. `true-true-false`

C. `true-false-true`

D. `true-false-false`

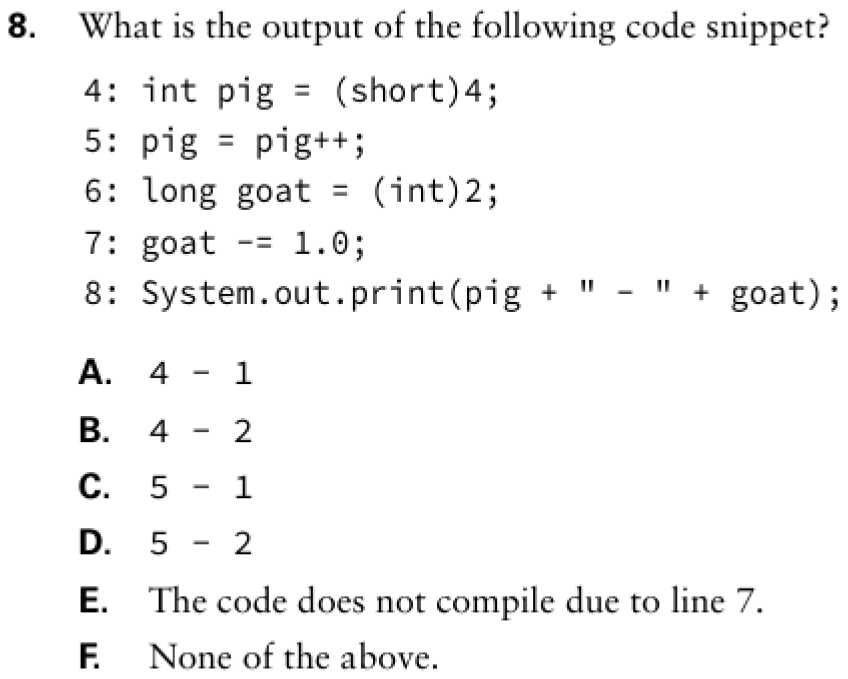
E. `false-true-true`

F. `false-true-false`

G. `false-false-true`

H. `false-false-false`

D: clear = true & (true || false) = true, safe = false directamente porque "&&" ya no evalúa lo que sigue, tasty = false porque --ph = 6



8. What is the output of the following code snippet?

```
4: int pig = (short)4;
5: pig = pig++;
6: long goat = (int)2;
7: goat -= 1.0;
8: System.out.print(pig + " - " + goat);
```

A. 4 - 1

B. 4 - 2

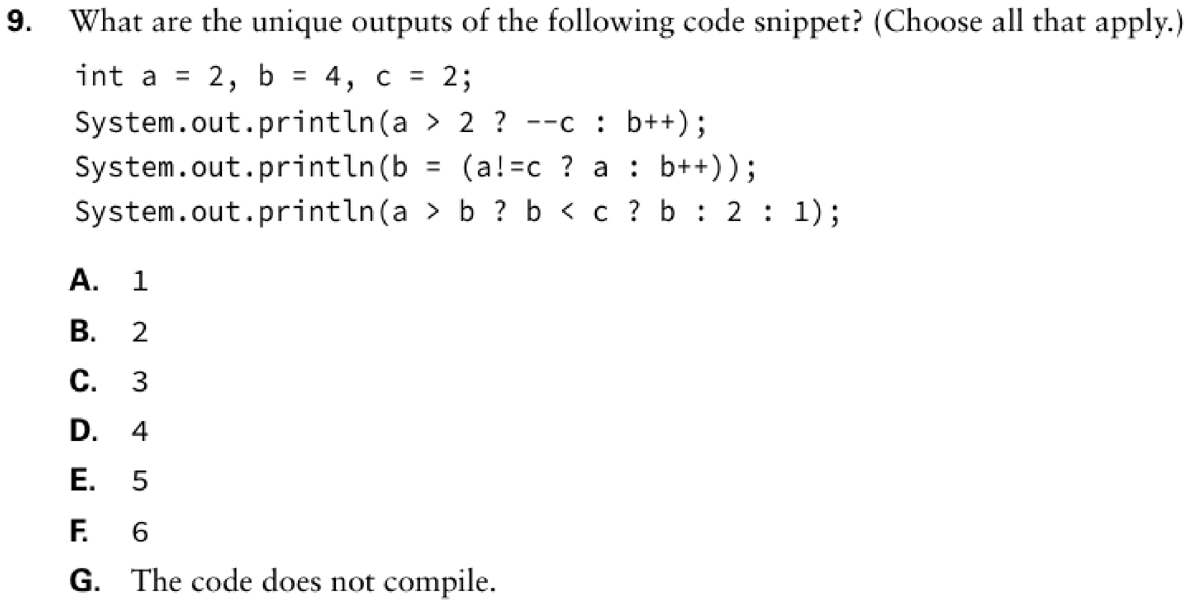
C. 5 - 1

D. 5 - 2

E. The code does not compile due to line 7.

F. None of the above.

A



9. What are the unique outputs of the following code snippet? (Choose all that apply.)

```
int a = 2, b = 4, c = 2;
System.out.println(a > 2 ? --c : b++);
System.out.println(b = (a!=c ? a : b++));
System.out.println(a > b ? b < c ? b : 2 : 1);
```

A. 1

B. 2

C. 3

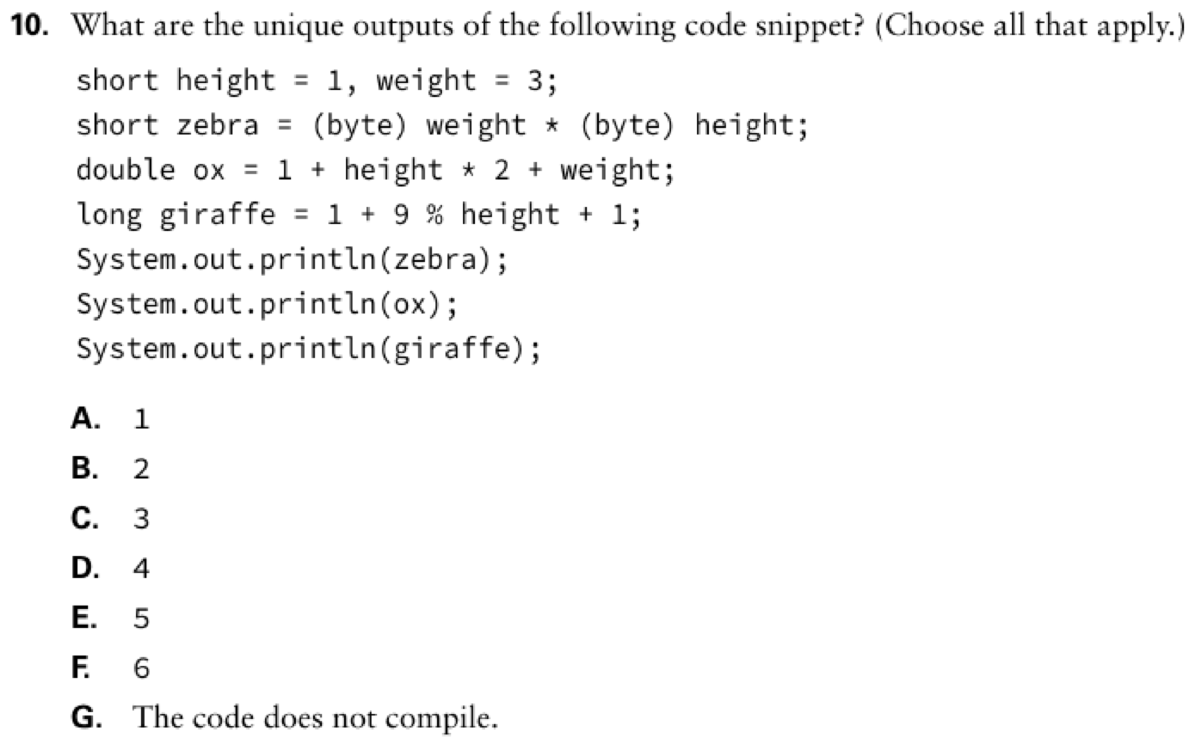
D. 4

E. 5

F. 6

G. The code does not compile.

A,D,E



10. What are the unique outputs of the following code snippet? (Choose all that apply.)

```
short height = 1, weight = 3;
short zebra = (byte) weight * (byte) height;
double ox = 1 + height * 2 + weight;
long giraffe = 1 + 9 % height + 1;
System.out.println(zebra);
System.out.println(ox);
System.out.println(giraffe);
```

A. 1

B. 2

C. 3

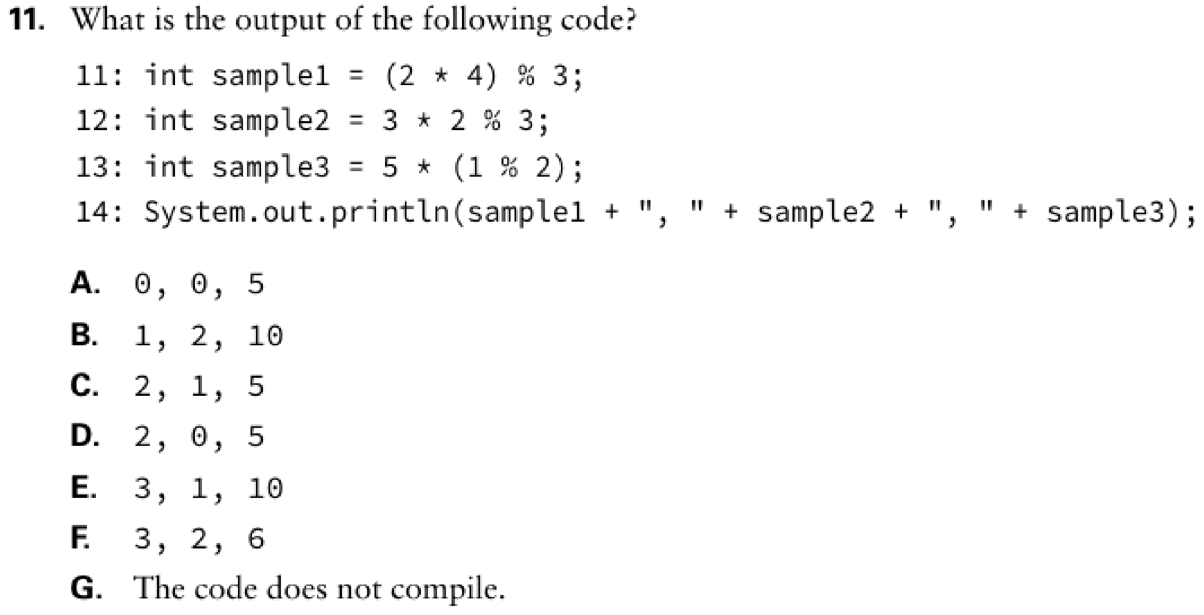
D. 4

E. 5

F. 6

G. The code does not compile.

G: la variable zebra debe convertirse a «int» para almacenar el resultado de la multiplicación



11. What is the output of the following code?

```
int sample1 = (2 * 4) % 3;
int sample2 = 3 * 2 % 3;
int sample3 = 5 * (1 % 2);
System.out.println(sample1 + ", " + sample2 + ", " + sample3);
```

A. `0, 0, 5`

B. `1, 2, 10`

C. `2, 1, 5`

D. `2, 0, 5`

E. `3, 1, 10`

F. `3, 2, 6`

G. The code does not compile.

D

12. The ________ operator increases a value and returns the original value, while the _______ operator decreases a value and returns the new value.

- **A.** post-increment, post-increment
- **B.** pre-decrement, post-decrement
- **C.** post-increment, post-decrement
- **D.** post-increment, pre-decrement
- **E.** pre-increment, pre-decrement
- **F.** pre-increment, post-decrement

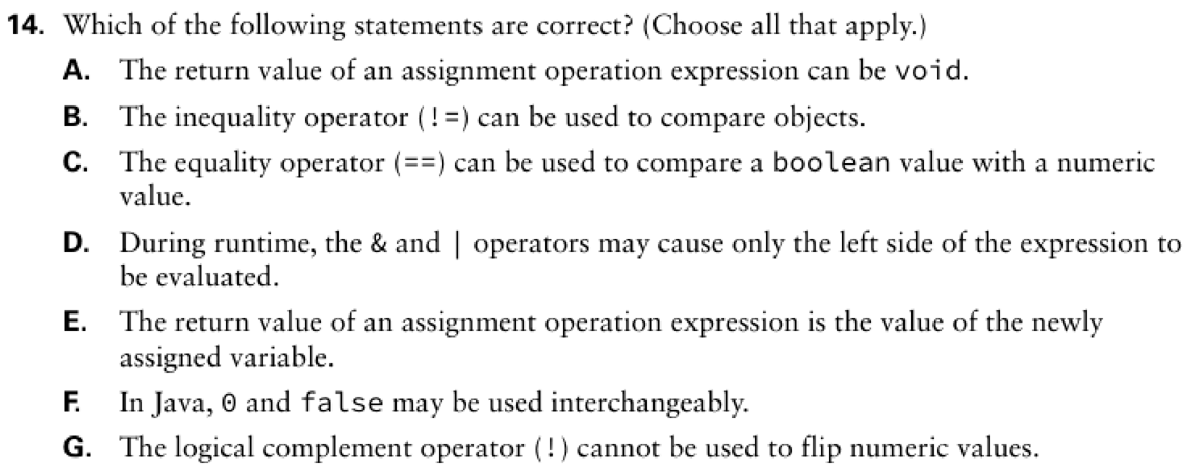
D

13. What is the output of the following code snippet?

```
boolean sunny = true, raining = false, sunday = true;
boolean goingToTheStore = sunny & raining ^ sunday;
boolean goingToTheZoo = sunday && !raining;
boolean stayingHome = !(goingToTheStore && goingToTheZoo);
System.out.println(goingToTheStore + "-" + goingToTheZoo
   + "-" +stayingHome);
```

- **A.** `true-false-false`
- **B.** `false-true-false`
- **C.** `true-true-true`
- **D.** `false-true-true`
- **E.** `false-false-false`
- **F.** `true-true-false`
- **G.** None of the above

F



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

A. The return value of an assignment operation expression can be `void`.

B. The inequality operator (`!=`) can be used to compare objects.

C. The equality operator (`==`) can be used to compare a `boolean` value with a numeric value.

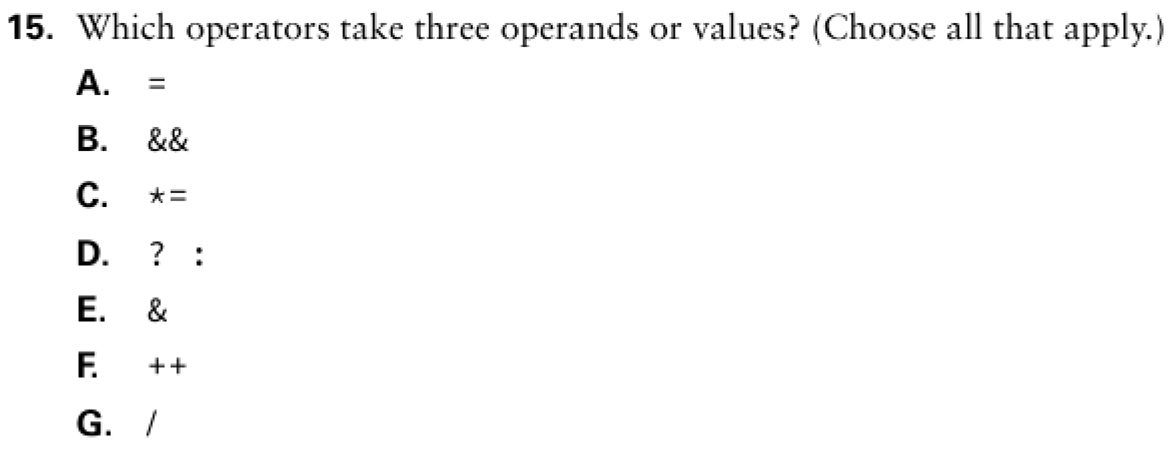
D. During runtime, the & and | operators may cause only the left side of the expression to be evaluated.

E. The return value of an assignment operation expression is the value of the newly assigned variable.

F. In Java, `0` and `false` may be used interchangeably.

G. The logical complement operator (`!`) cannot be used to flip numeric values.

B,E,G



15. Which operators take three operands or values? (Choose all that apply.)

A. `=`

B. `&&`

C. `*=`

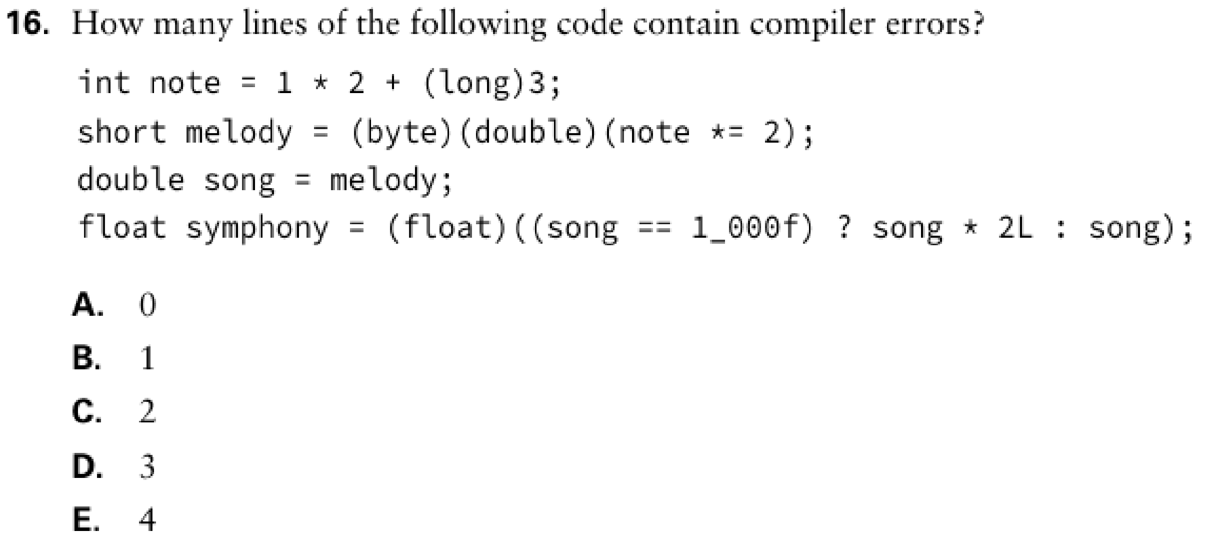
D. `? :`

E. `&`

F. `++`

G. `/`

D: “a ? b : c”



16. How many lines of the following code contain compiler errors?

```
int note = 1 * 2 + (long)3;
short melody = (byte)(double)(note *= 2);
double song = melody;
float symphony = (float)((song == 1_000f) ? song * 2L : song);
```

A. 0

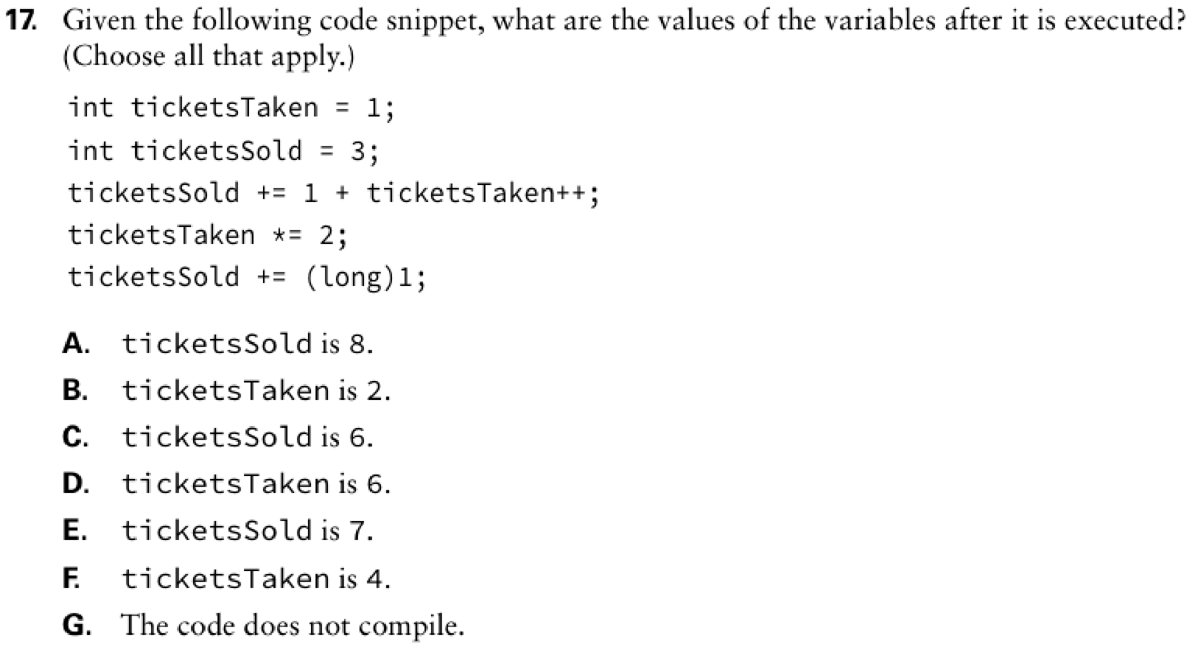
B. 1

C. 2

D. 3

E. 4

D



17. Given the following code snippet, what are the values of the variables after it is executed? (Choose all that apply.)

```
int ticketsTaken = 1;
int ticketsSold = 3;
ticketsSold += 1 + ticketsTaken++;
ticketsTaken *= 2;
ticketsSold += (long)1;
```

A. `ticketsSold` is 8.

B. `ticketsTaken` is 2.

C. `ticketsSold` is 6.

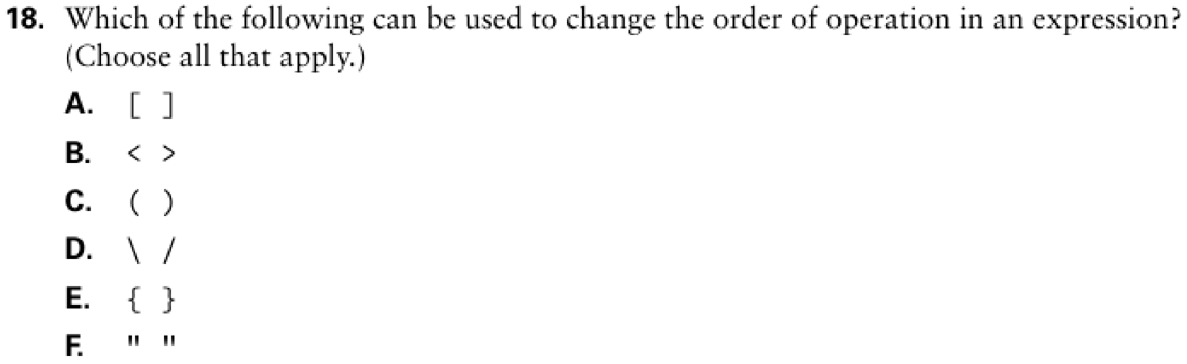
D. `ticketsTaken` is 6.

E. `ticketsSold` is 7.

F. `ticketsTaken` is 4.

G. The code does not compile.

C,F



18. Which of the following can be used to change the order of operation in an expression? (Choose all that apply.)

A. `[ ]`

B. `< >`

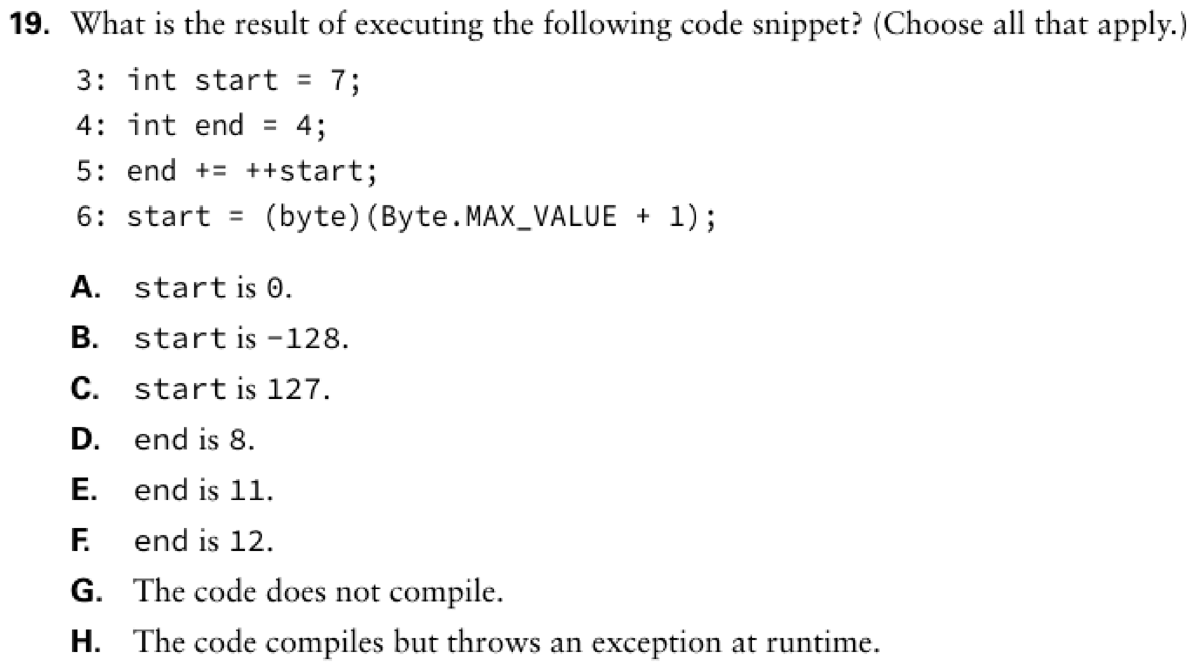
C. `( )`

D. `\ /`

E. `{ }`

F. `" "`

C: Solo los paréntesis se usan para eso

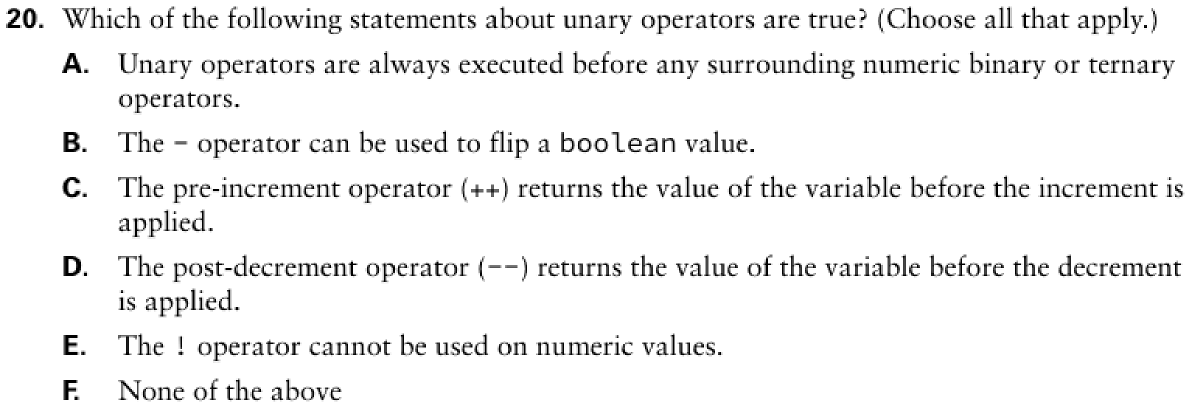


19. What is the result of executing the following code snippet? (Choose all that apply.)

```
int start = 7;
int end = 4;
end += ++start;
start = (byte)(Byte.MAX_VALUE + 1);
```

- **A.** `start` is `0`.
- **B.** `start` is `-128`.
- **C.** `start` is `127`.
- **D.** `end` is `8`.
- **E.** `end` is `11`.
- **F.** `end` is `12`.
- **G.** The code does not compile.
- **H.** The code compiles but throws an exception at runtime.

B,F



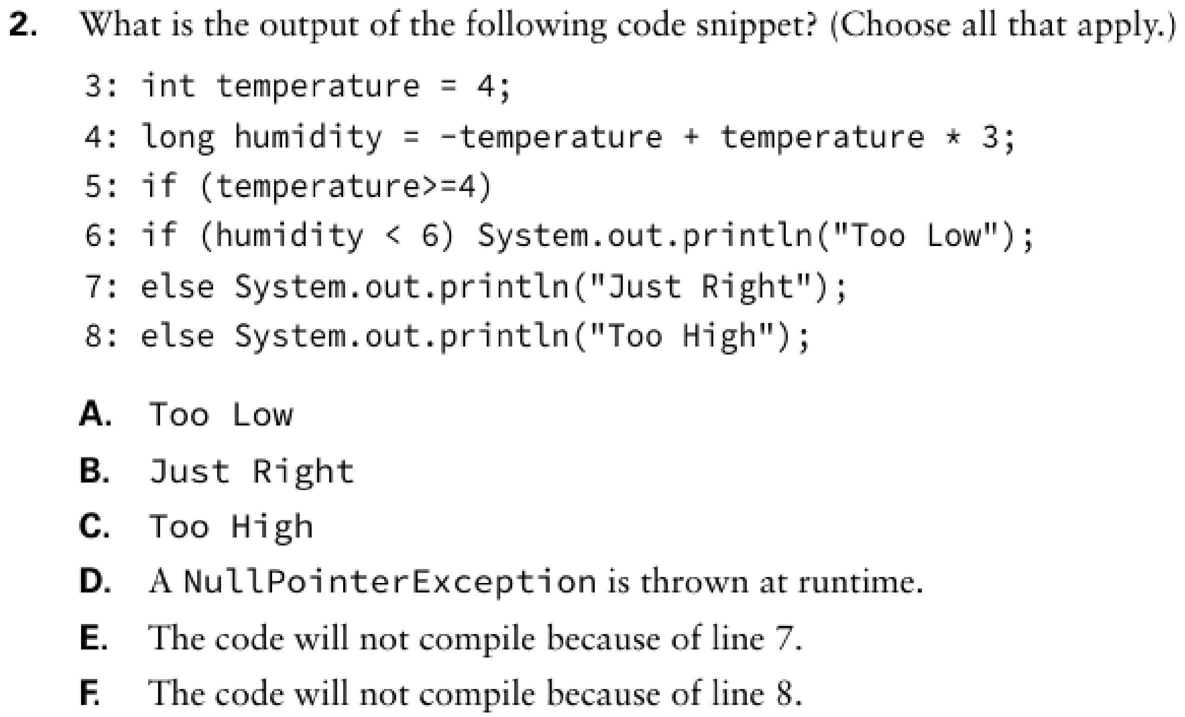
20. Which of the following statements about unary operators are true? (Choose all that apply.)

- **A.** Unary operators are always executed before any surrounding numeric binary or ternary operators.
- **B.** The `-` operator can be used to flip a `boolean` value.
- **C.** The pre-increment operator (`++`) returns the value of the variable before the increment is applied.
- **D.** The post-decrement operator (`--`) returns the value of the variable before the decrement is applied.
- **E.** The `!` operator cannot be used on numeric values.
- **F.** None of the above

A,D,E: jshdkjshj

Chapter 3

Making Decisions



2. What is the output of the following code snippet? (Choose all that apply.)

```
3: int temperature = 4;
4: long humidity = -temperature + temperature * 3;
5: if (temperature>=4)
6: if (humidity < 6) System.out.println("Too Low");
7: else System.out.println("Just Right");
8: else System.out.println("Too High");
```

A. `Too Low`

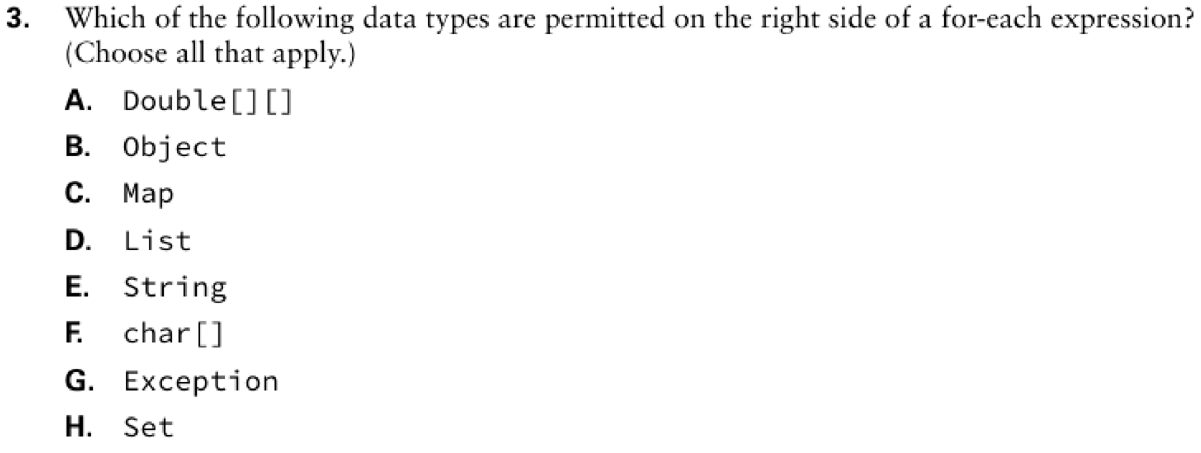
B. `Just Right`

C. `Too High`

D. A `NullPointerException` is thrown at runtime.

E. The code will not compile because of line 7.

F. The code will not compile because of line 8.



3. Which of the following data types are permitted on the right side of a for-each expression? (Choose all that apply.)

A. `Double[][]`

B. `Object`

C. `Map`

D. `List`

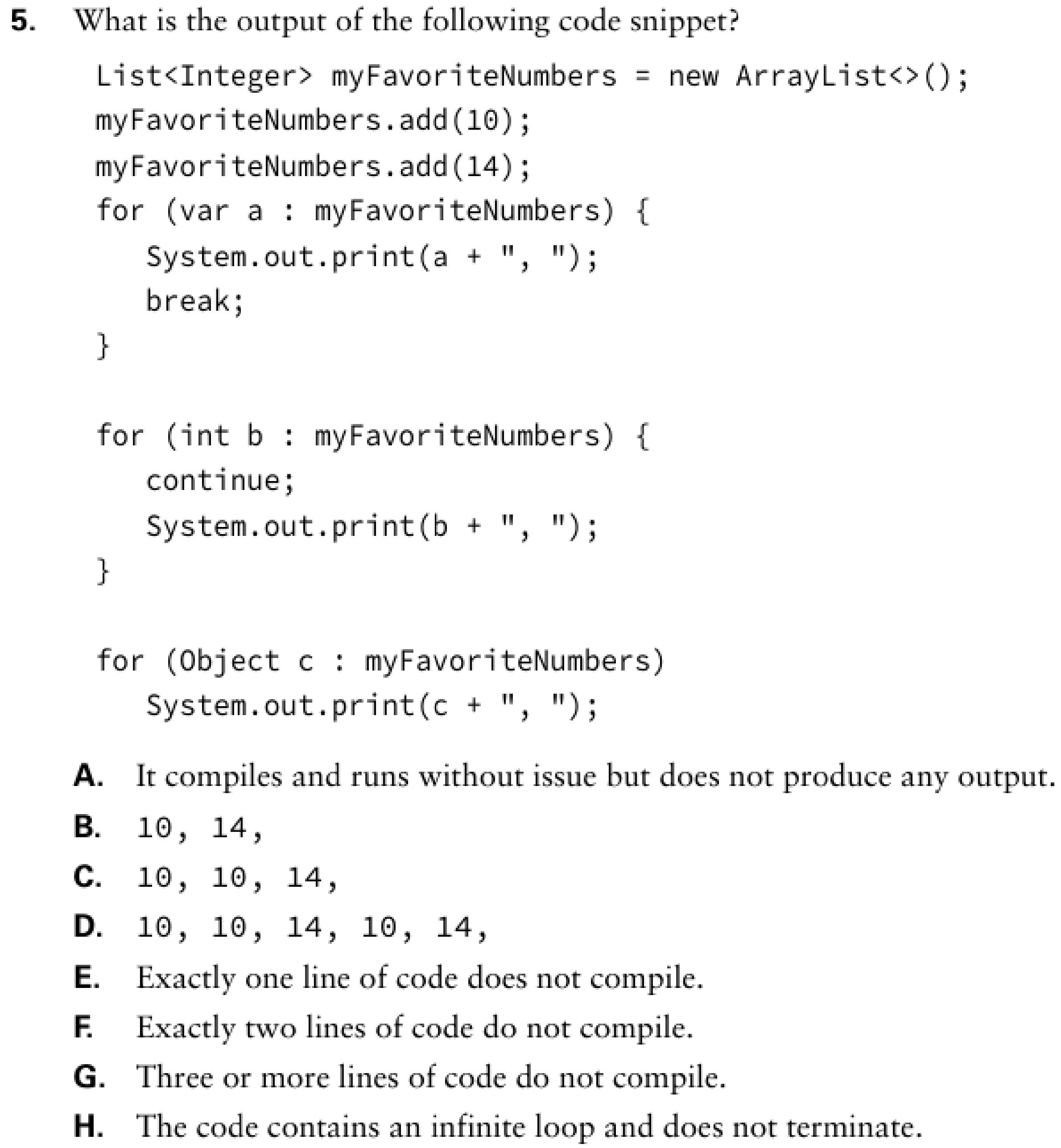
E. `String`

F. `char[]`

G. `Exception`

H. `Set`

A,D,F,H



5. What is the output of the following code snippet?

```
List<Integer> myFavoriteNumbers = new ArrayList<>();
myFavoriteNumbers.add(10);
myFavoriteNumbers.add(14);
for (var a : myFavoriteNumbers) {
   System.out.print(a + ", ");
   break;
}

for (int b : myFavoriteNumbers) {
   continue;
   System.out.print(b + ", ");
}

for (Object c : myFavoriteNumbers)
   System.out.print(c + ", ");
```

A. It compiles and runs without issue but does not produce any output.

B. `10, 14,`

C. `10, 10, 14,`

D. `10, 10, 14, 10, 14,`

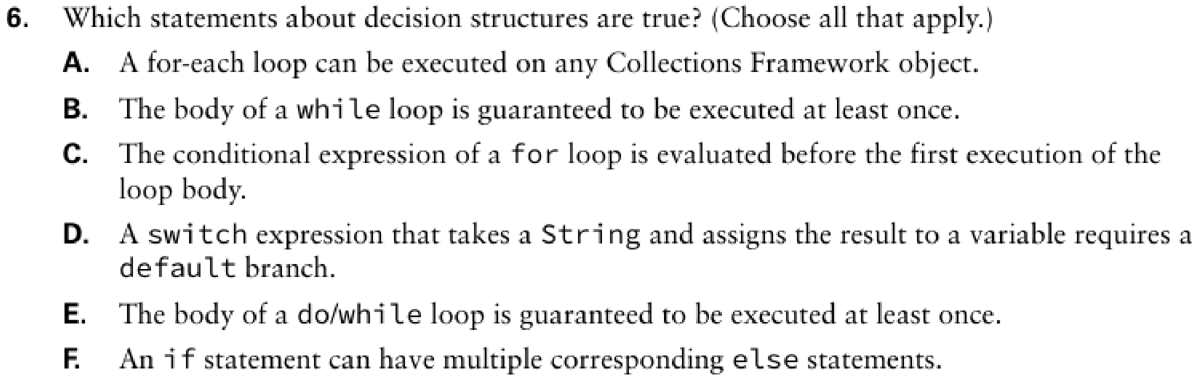
E. Exactly one line of code does not compile.

F. Exactly two lines of code do not compile.

G. Three or more lines of code do not compile.

H. The code contains an infinite loop and does not terminate.

E: Por el «continue» en el segundo for-each se sale del bucle



6. Which statements about decision structures are true? (Choose all that apply.)

A. A for-each loop can be executed on any Collections Framework object.

B. The body of a `while` loop is guaranteed to be executed at least once.

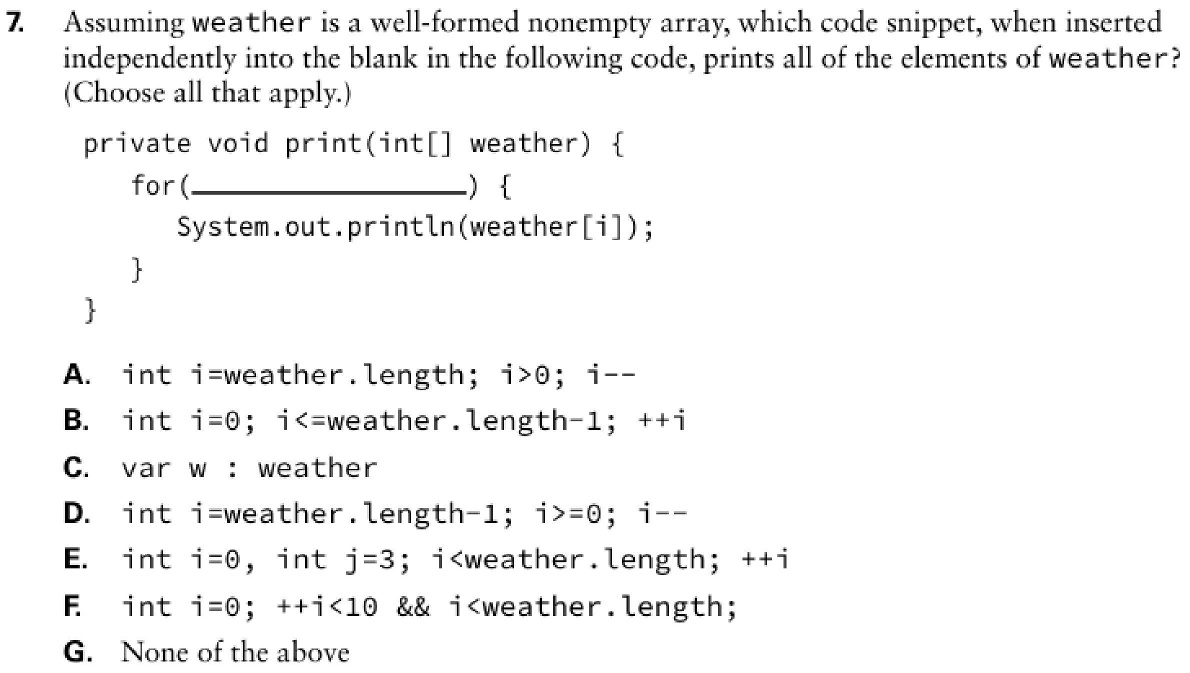
C. The conditional expression of a `for` loop is evaluated before the first execution of the loop body.

D. A `switch` expression that takes a `String` and assigns the result to a variable requires a `default` branch.

E. The body of a `do/while` loop is guaranteed to be executed at least once.

F. An `if` statement can have multiple corresponding `else` statements.

A,C,E,F

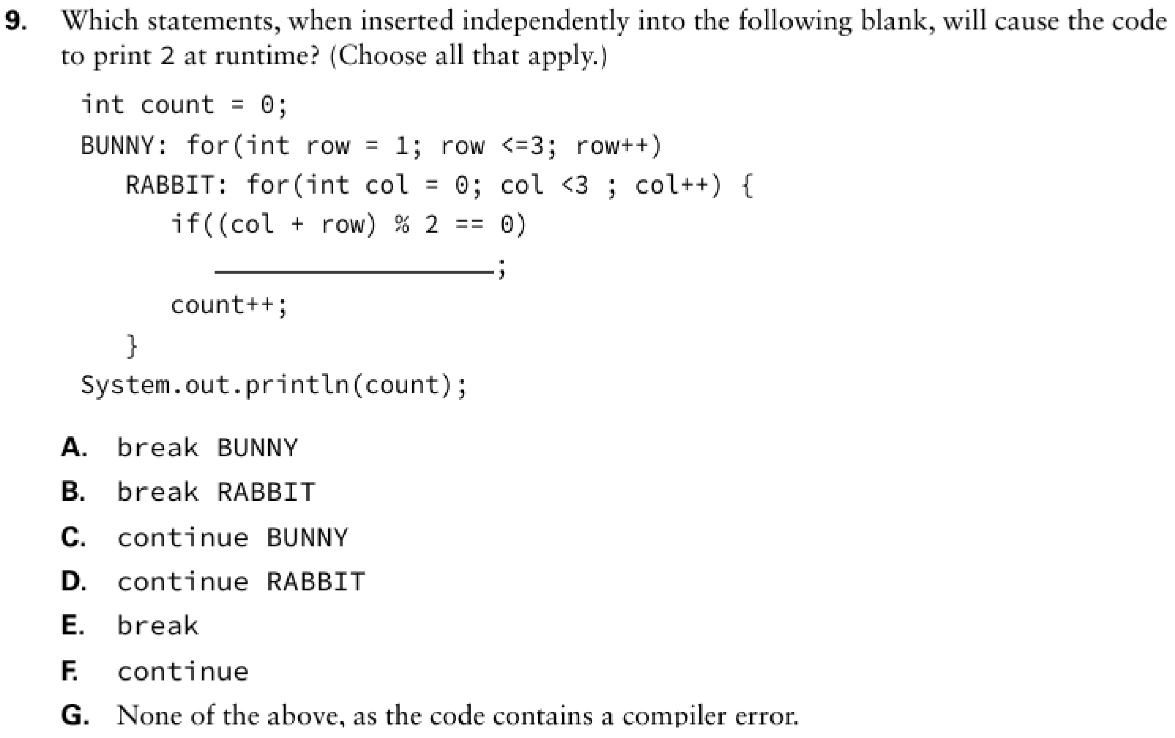


7. Assuming `weather` is a well-formed nonempty array, which code snippet, when inserted independently into the blank in the following code, prints all of the elements of `weather`? (Choose all that apply.)

```
private void print(int[] weather) {
   for(____________________) {
      System.out.println(weather[i]);
   }
}
```

- **A.** `int i=weather.length; i>0; i--`
- **B.** `int i=0; i<=weather.length-1; ++i`
- **C.** `var w : weather`
- **D.** `int i=weather.length-1; i>=0; i--`
- **E.** `int i=0, int j=3; i<weather.length; ++i`
- **F.** `int i=0; ++i<10 && i<weather.length;`
- **G.** None of the above

B



9. Which statements, when inserted independently into the following blank, will cause the code to print 2 at runtime? (Choose all that apply.)

```
int count = 0;
BUNNY: for(int row = 1; row <=3; row++)
   RABBIT: for(int col = 0; col <3 ; col++) {
      if((col + row) % 2 == 0)
         ____________________;
      count++;
   }
System.out.println(count);
```

- **A.** `break BUNNY`
- **B.** `break RABBIT`
- **C.** `continue BUNNY`
- **D.** `continue RABBIT`
- **E.** `break`
- **F.** `continue`
- **G.** None of the above, as the code contains a compiler error.

B,C,E

10. Given the following method, how many lines contain compilation errors? (Choose all that apply.)

```
private DayOfWeek getWeekDay(int day, final int thursday) {
   int otherDay = day;
   int Sunday = 0;
   switch(otherDay) {
      default:
      case 1: continue;
      case thursday: return DayOfWeek.THURSDAY;
      case 2,10: break;
      case Sunday: return DayOfWeek.SUNDAY;
      case DayOfWeek.MONDAY: return DayOfWeek.MONDAY;
   }
   return DayOfWeek.FRIDAY;
}
```

A. None, the code compiles without issue.

B. 1

C. 2

D. 3

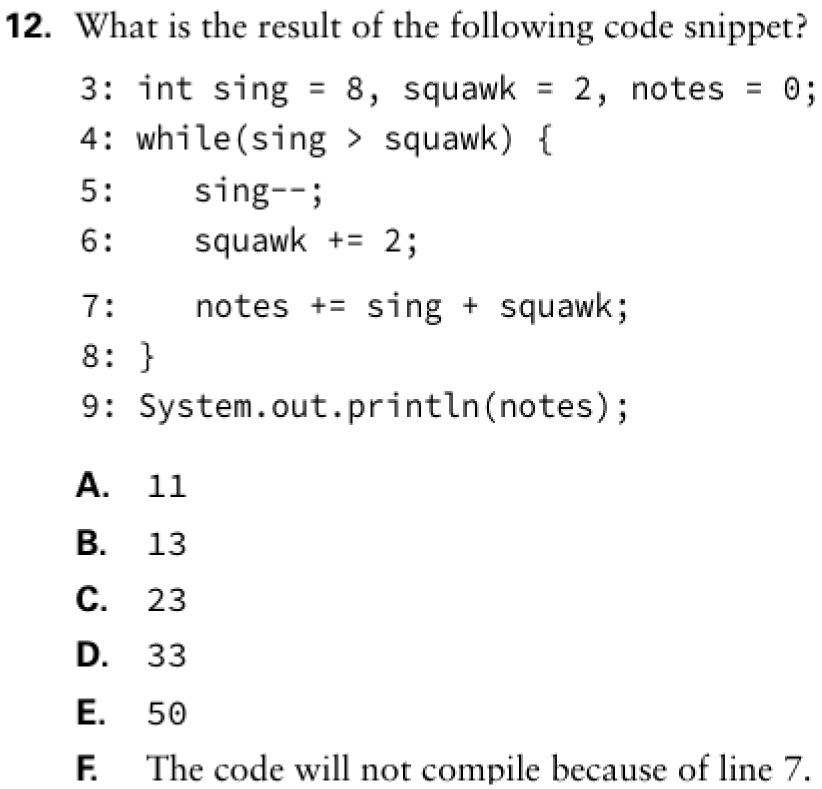
E. 4

F. 5

G. 6

H. The code compiles but may produce an error at runtime.

E



12. What is the result of the following code snippet?

```
3: int sing = 8, squawk = 2, notes = 0;
4: while(sing > squawk) {
5:    sing--;
6:    squawk += 2;
7:    notes += sing + squawk;
8: }
9: System.out.println(notes);
```

A. 11

B. 13

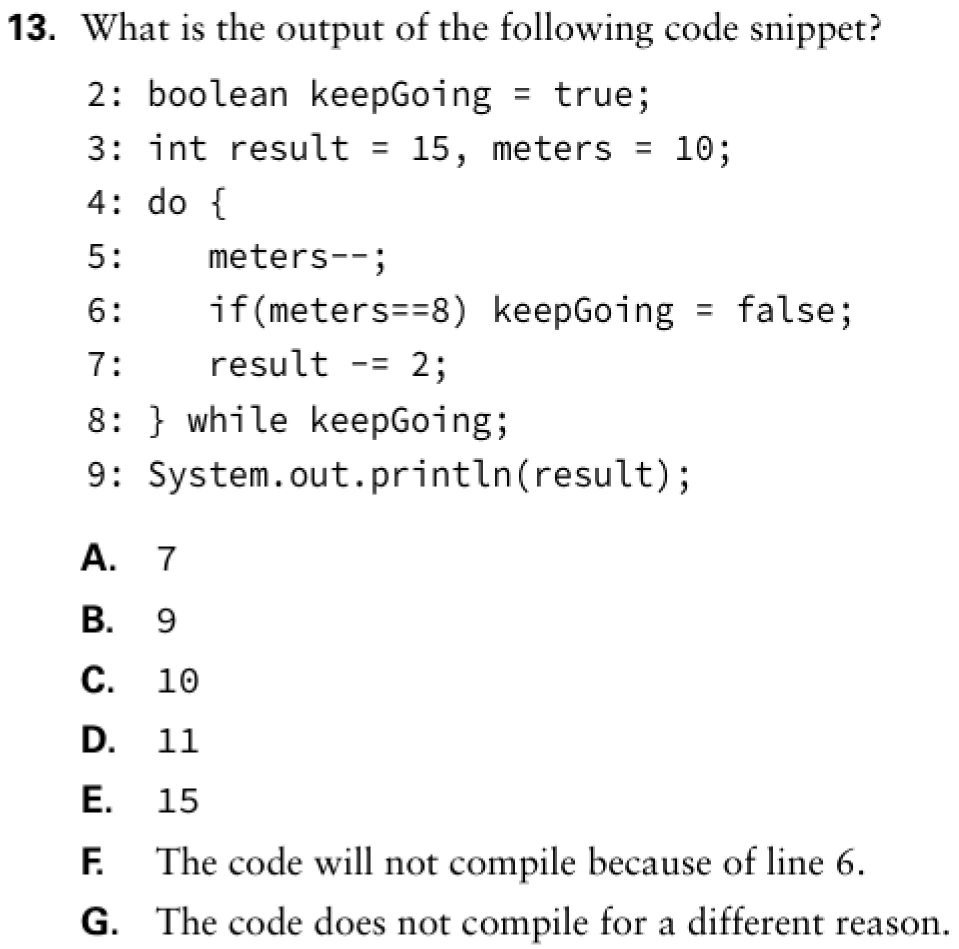
C. 23

D. 33

E. 50

F. The code will not compile because of line 7.

C: “sing” baja a 7 y “squawk” sube a 4, “notes” ahora vale 11 y “sing” sigue siendo mayor a “squawk”, “sing” baja a 6 y “squawk” sube a 6, “notes” ahora vale 23, termina «while» y se imprime el 23



13. What is the output of the following code snippet?

```
2: boolean keepGoing = true;
3: int result = 15, meters = 10;
4: do {
5:    meters--;
6:    if(meters==8) keepGoing = false;
7:    result -= 2;
8: } while keepGoing;
9: System.out.println(result);
```

A. 7

B. 9

C. 10

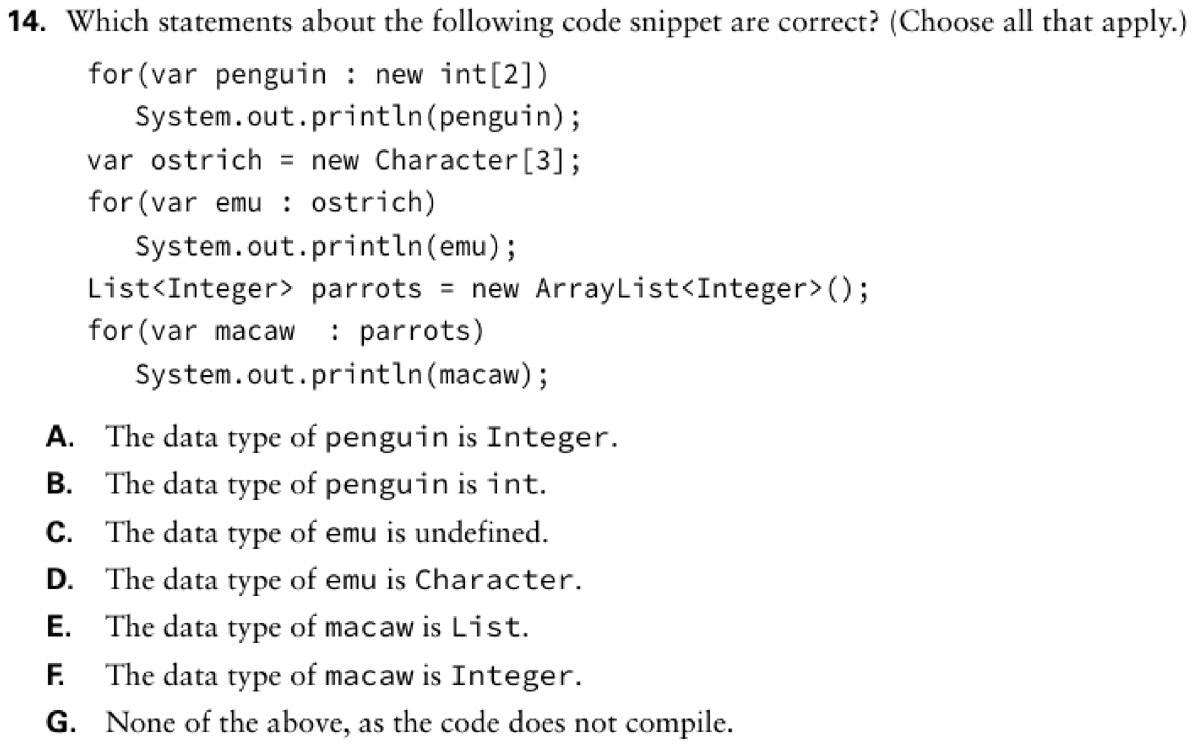
D. 11

E. 15

F. The code will not compile because of line 6.

G. The code does not compile for a different reason.

G: Faltan los paréntesis alrededor de “keepGoing” para ejecutar «while» en línea 8



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

```
for(var penguin : new int[2])
   System.out.println(penguin);
var ostrich = new Character[3];
for(var emu : ostrich)
   System.out.println(emu);
List<Integer> parrots = new ArrayList<Integer>();
for(var macaw  : parrots)
   System.out.println(macaw);
```

A. The data type of `penguin` is `Integer`.

B. The data type of `penguin` is `int`.

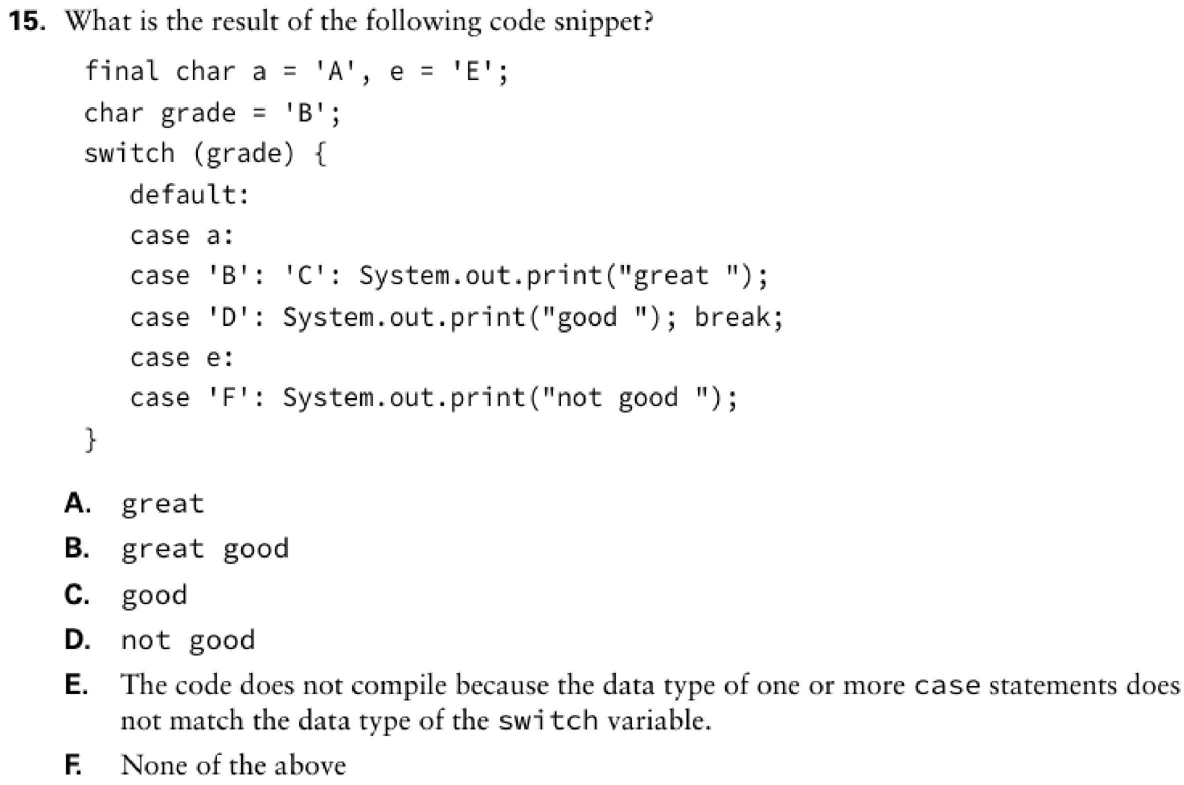
C. The data type of `emu` is undefined.

D. The data type of `emu` is `Character`.

E. The data type of `macaw` is `List`.

F. The data type of `macaw` is `Integer`.

G. None of the above, as the code does not compile.



15. What is the result of the following code snippet?

```
final char a = 'A', e = 'E';
char grade = 'B';
switch (grade) {
   default:
   case a:
   case 'B': 'C': System.out.print("great ");
   case 'D': System.out.print("good "); break;
   case e:
   case 'F': System.out.print("not good ");
}
```

A. `great`

B. `great good`

C. `good`

D. `not good`

E. The code does not compile because the data type of one or more `case` statements does not match the data type of the `switch` variable.

F. None of the above

F: No se puede encadenar dos «case» como sucede en “case ‘B’: ‘C’:”

16. Given the following array, which code snippets print the elements in reverse order from how they are declared? (Choose all that apply.)

```
char[] wolf = {'W', 'e', 'b', 'b', 'y'};
```

A.

```
int q = wolf.length;
for( ; ; ) {
   System.out.print(wolf[--q]);
   if(q==0) break;
}
```

B.

```
for(int m=wolf.length-1; m>=0; --m)
   System.out.print(wolf[m]);
```

C.

```
for(int z=0; z<wolf.length; z++)
   System.out.print(wolf[wolf.length-z]);
```

D.

```
int x = wolf.length-1;
for(int j=0; x>=0 && j==0; x--)
   System.out.print(wolf[x]);
```

E.

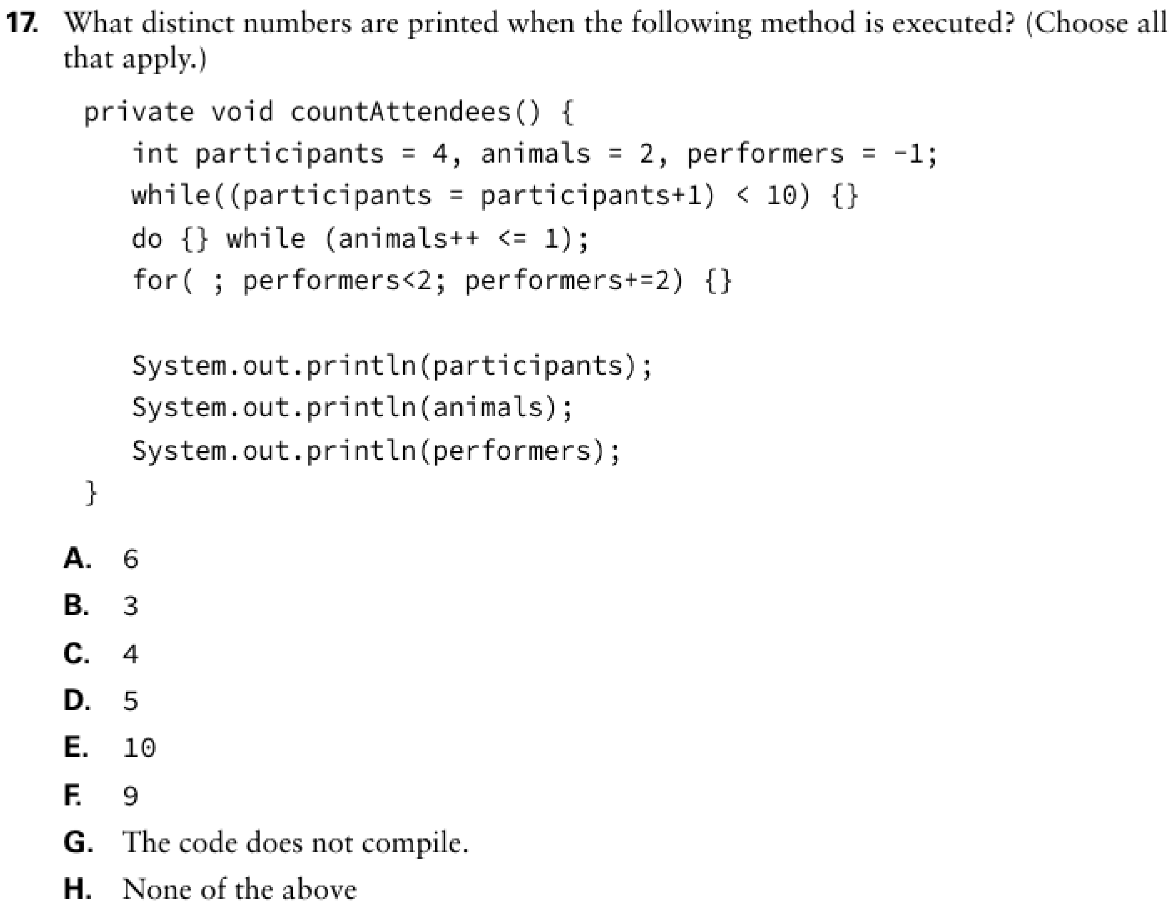
```
final int r = wolf.length;
for(int w = r-1; r>-1; w = r-1)
   System.out.print(wolf[w]);
```

F.

```
for(int i=wolf.length; i>0; --i)
   System.out.print(wolf[i]);
```

G. None of the above

B,C



17. What distinct numbers are printed when the following method is executed? (Choose all that apply.)

```
private void countAttendees() {
   int participants = 4, animals = 2, performers = -1;
   while((participants = participants+1) < 10) {}
   do {} while (animals++ <= 1);
   for( ; performers<2; performers+=2) {}

   System.out.println(participants);
   System.out.println(animals);
   System.out.println(performers);
}
```

A. 6

B. 3

C. 4

D. 5

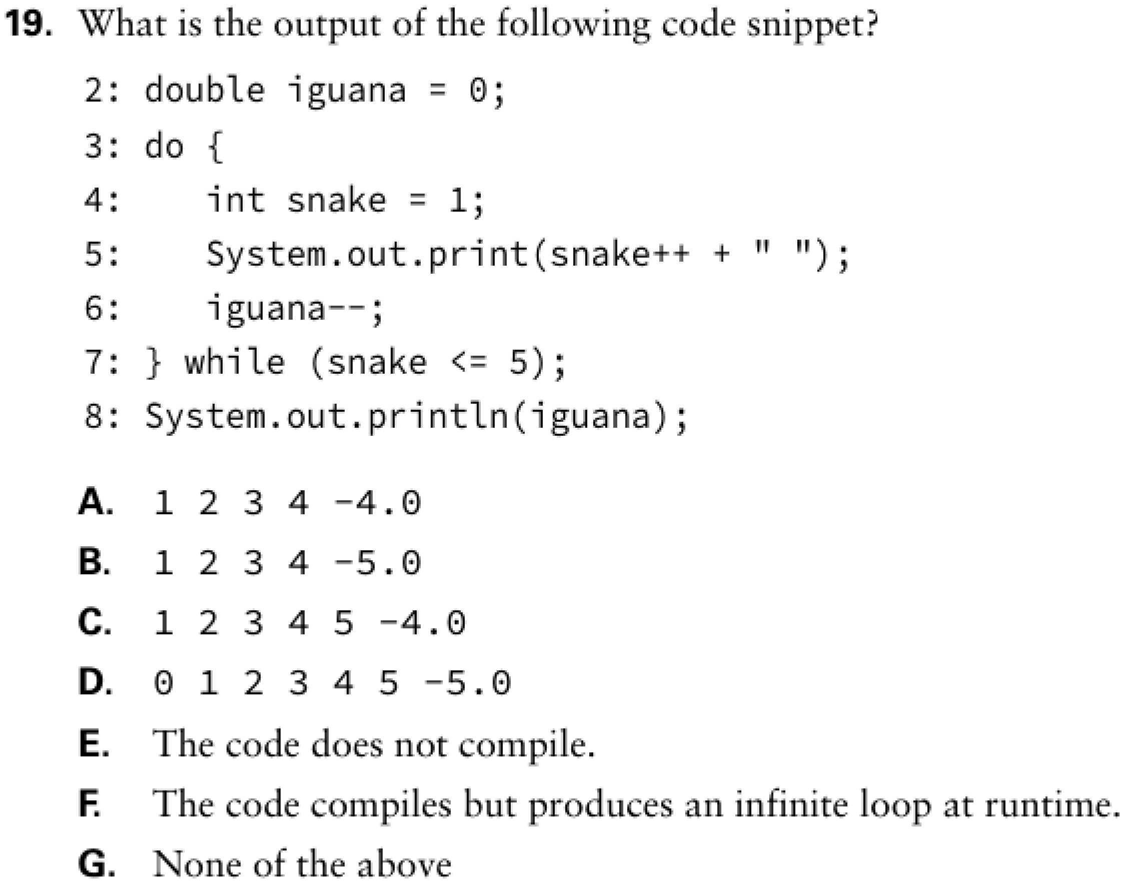
E. 10

F. 9

G. The code does not compile.

H. None of the above

G:



19. What is the output of the following code snippet?

```
double iguana = 0;
do {
   int snake = 1;
   System.out.print(snake++ + " ");
   iguana--;
} while (snake <= 5);
System.out.println(iguana);
```

A. `1 2 3 4 -4.0`

B. `1 2 3 4 -5.0`

C. `1 2 3 4 5 -4.0`

D. `0 1 2 3 4 5 -5.0`

E. The code does not compile.

F. The code compiles but produces an infinite loop at runtime.

G. None of the above

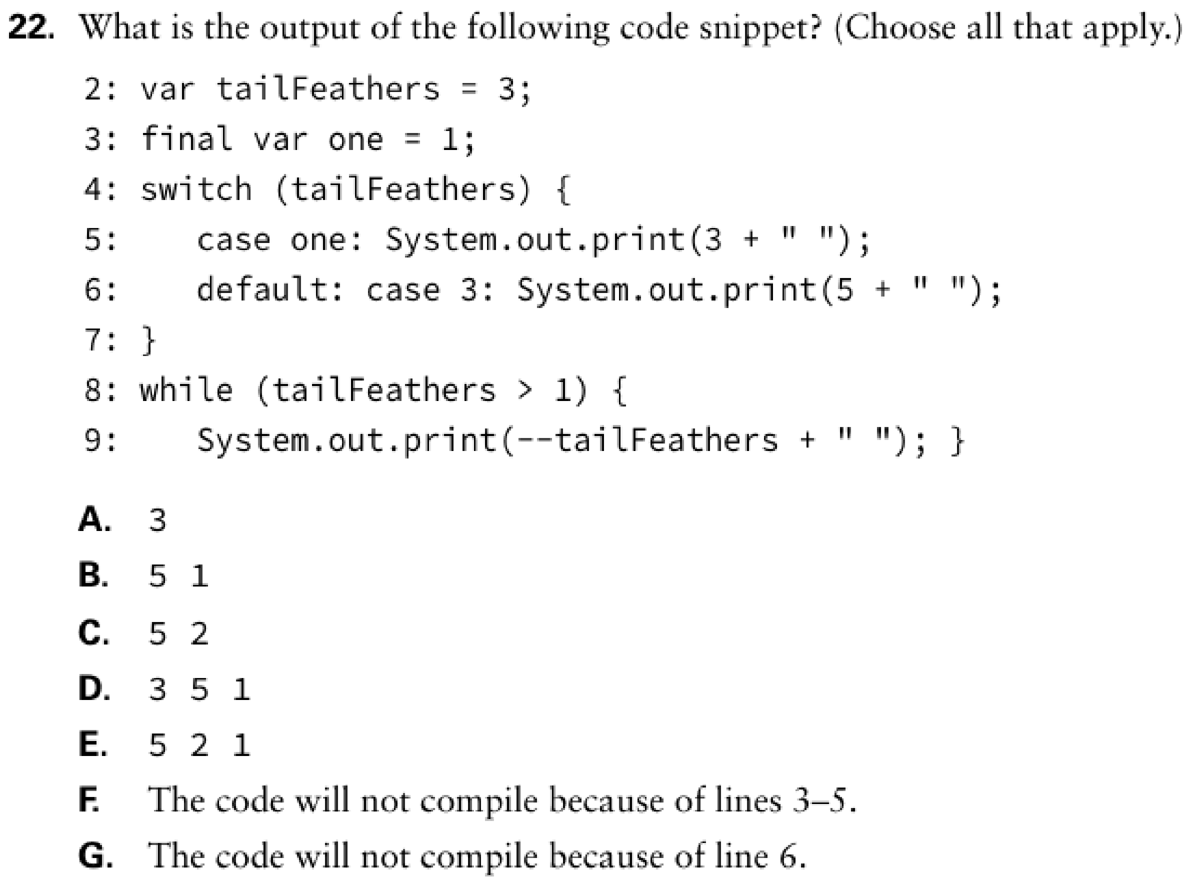
E: “snake” solo existe dentro del do/while

20. Which statements, when inserted into the following blanks, allow the code to compile and run without entering an infinite loop? (Choose all that apply.)

```
4:  int height = 1;
5:  L1: while(height++ <10) {
6:     long humidity = 12;
7:     L2: do {
8:        if(humidity-- % 12 == 0) ________________;
9:        int temperature = 30;
10:       L3: for( ; ; ) {
11:          temperature++;
12:          if(temperature>50) ________________;
13:       }
14:    } while (humidity > 4);
15: }
```

- **A.** `break L2` on line 8; `continue L2` on line 12
- **B.** `continue` on line 8; `continue` on line 12
- **C.** `break L3` on line 8; `break L1` on line 12
- **D.** `continue L2` on line 8; `continue L3` on line 12
- **E.** `continue L2` on line 8; `continue L2` on line 12
- **F.** None of the above, as the code contains a compiler error

D



22. What is the output of the following code snippet? (Choose all that apply.)

```
2: var tailFeathers = 3;
3: final var one = 1;
4: switch (tailFeathers) {
5:    case one: System.out.print(3 + " ");
6:    default: case 3: System.out.print(5 + " ");
7: }
8: while (tailFeathers > 1) {
9:    System.out.print(--tailFeathers + " "); }
```

A. `3`

B. `5 1`

C. `5 2`

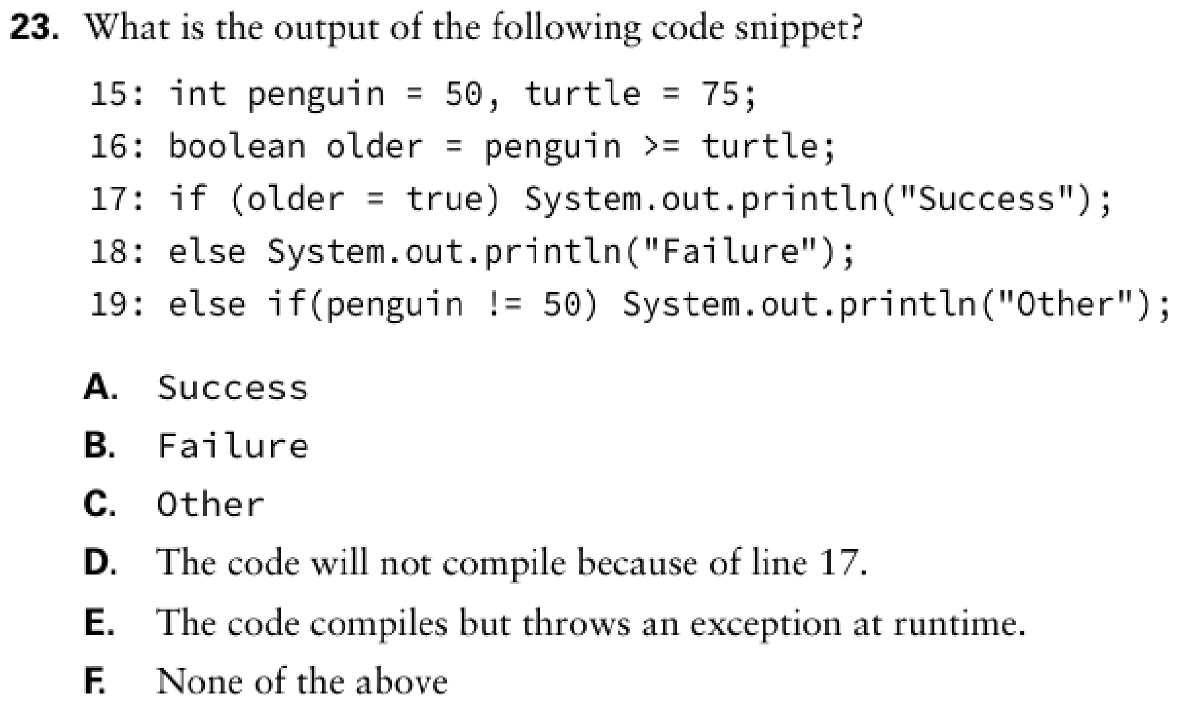
D. `3 5 1`

E. `5 2 1`

F. The code will not compile because of lines 3–5.

G. The code will not compile because of line 6.

E



23. What is the output of the following code snippet?

```
15: int penguin = 50, turtle = 75;
16: boolean older = penguin >= turtle;
17: if (older = true) System.out.println("Success");
18: else System.out.println("Failure");
19: else if(penguin != 50) System.out.println("Other");
```

A. `Success`

B. `Failure`

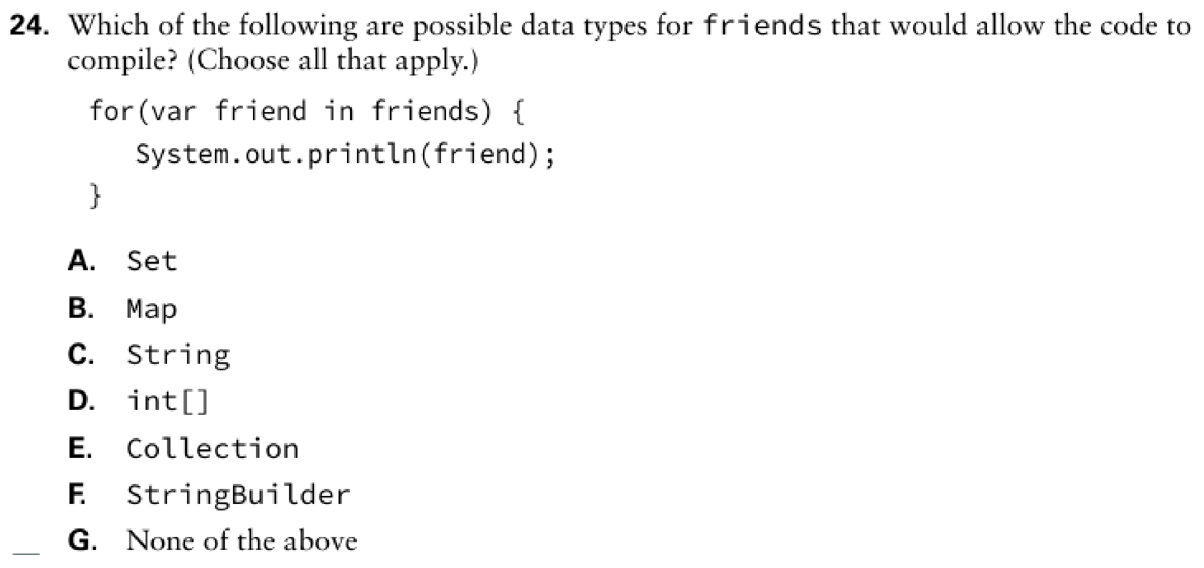
C. `Other`

D. The code will not compile because of line 17.

E. The code compiles but throws an exception at runtime.

F. None of the above

F: No compila porque «else if» va antes que «else»



24. Which of the following are possible data types for `friends` that would allow the code to compile? (Choose all that apply.)

```
for(var friend in friends) {
   System.out.println(friend);
}
```

A. `Set`

B. `Map`

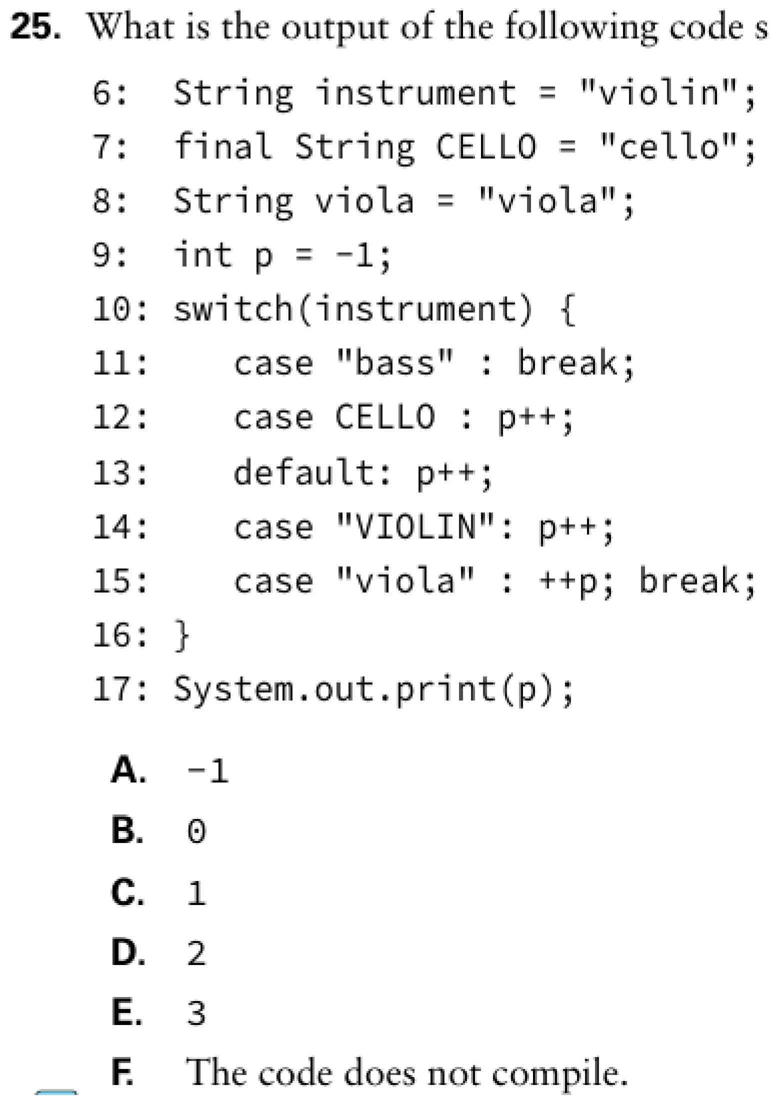
C. `String`

D. `int[]`

E. `Collection`

F. `StringBuilder`

G. None of the above



25. What is the output of the following code snippet?

```
String instrument = "violin";
final String CELLO = "cello";
String viola = "viola";
int p = -1;
switch(instrument) {
   case "bass" : break;
   case CELLO : p++;
   default: p++;
   case "VIOLIN": p++;
   case "viola" : ++p; break;
}
System.out.print(p);
```

A. -1

B. 0

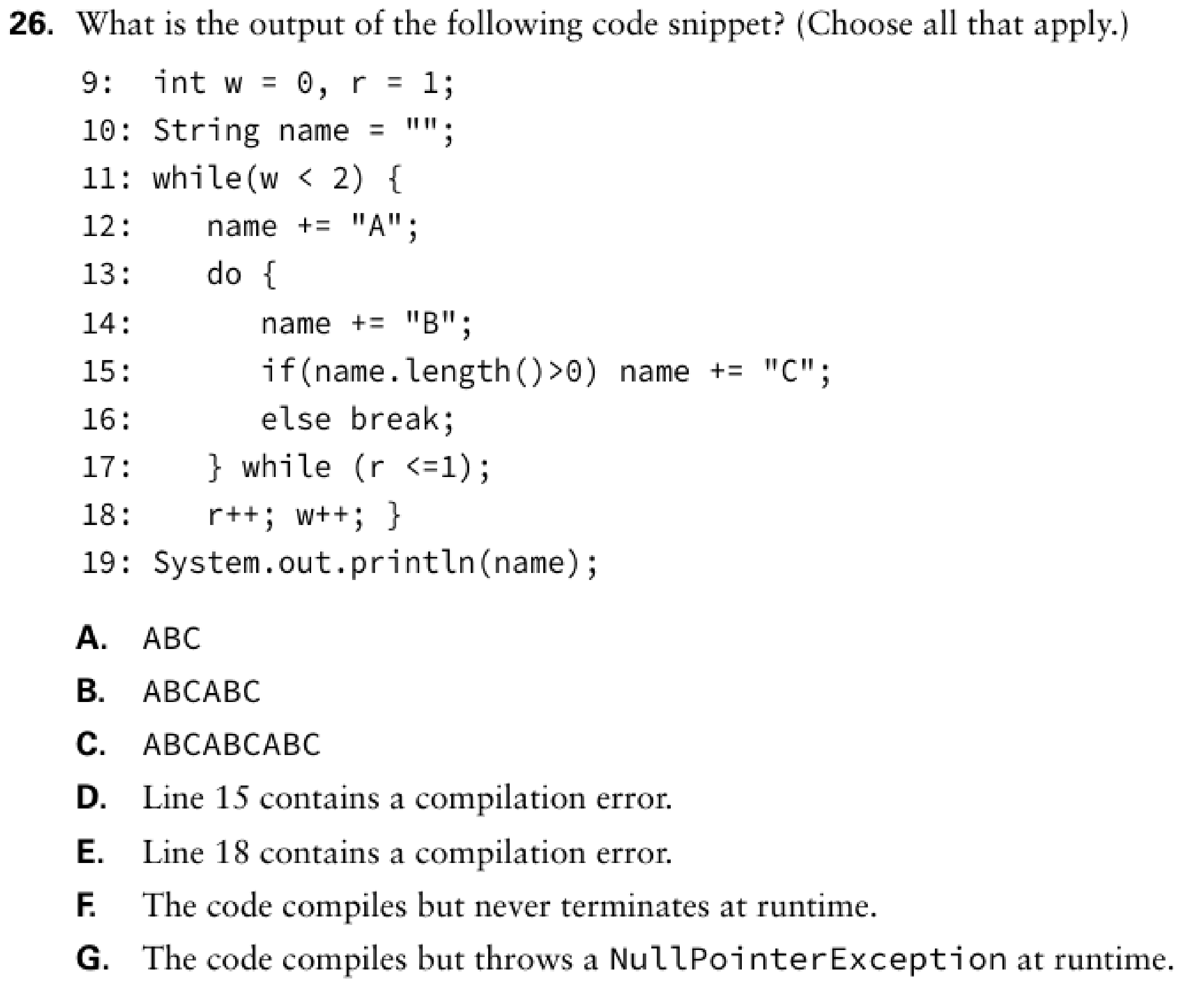
C. 1

D. 2

E. 3

F. The code does not compile.

D



26. What is the output of the following code snippet? (Choose all that apply.)

```
9:  int w = 0, r = 1;
10: String name = "";
11: while(w < 2) {
12:    name += "A";
13:    do {
14:       name += "B";
15:       if(name.length()>0) name += "C";
16:       else break;
17:    } while (r <=1);
18:    r++; w++; }
19: System.out.println(name);
```

- **A.** ABC
- **B.** ABCABC
- **C.** ABCABCABC
- **D.** Line 15 contains a compilation error.
- **E.** Line 18 contains a compilation error.
- **F.** The code compiles but never terminates at runtime.
- **G.** The code compiles but throws a `NullPointerException` at runtime.

F: “r” nunca incrementa

28. What is the output of calling `getFish("goldie")`?

```
void getFish(Object fish) {
   if (!(fish instanceof String guppy))
      System.out.print("Eat!");
   else if (!(fish instanceof String guppy)) {
      throw new RuntimeException();
   }
   System.out.print("Swim!");
}
```

A. `Eat!`

B. `Swim!`

C. `Eat!` followed by an exception.

D. `Eat!Swim!`

E. An exception is printed.

F. None of the above

29. What is the result of the following code?

```
1: public class PrintIntegers {
2:    public static void main(String[] args) {
3:       int y = -2;
4:       do System.out.print(++y + " ");
5:       while(y <= 5);
6: } }
```

A. `-2 -1 0 1 2 3 4 5`

B. `-2 -1 0 1 2 3 4`

C. `-1 0 1 2 3 4 5 6`

D. `-1 0 1 2 3 4 5`

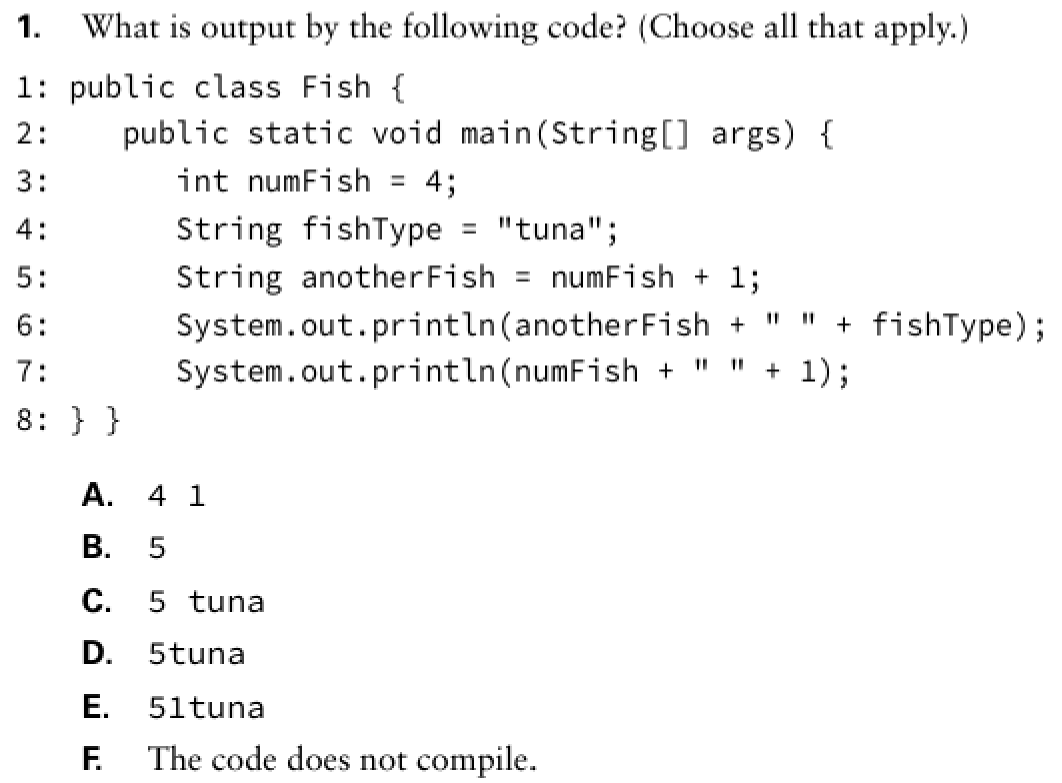
E. The code will not compile because of line 5.

F. The code contains an infinite loop and does not terminate.

C

Chapter 4

Core APIs



1. What is output by the following code? (Choose all that apply.)

```
public class Fish {
   public static void main(String[] args) {
      int numFish = 4;
      String fishType = "tuna";
      String anotherFish = numFish + 1;
      System.out.println(anotherFish + " " + fishType);
      System.out.println(numFish + " " + 1);
} }
```

A. `4 1`

B. `5`

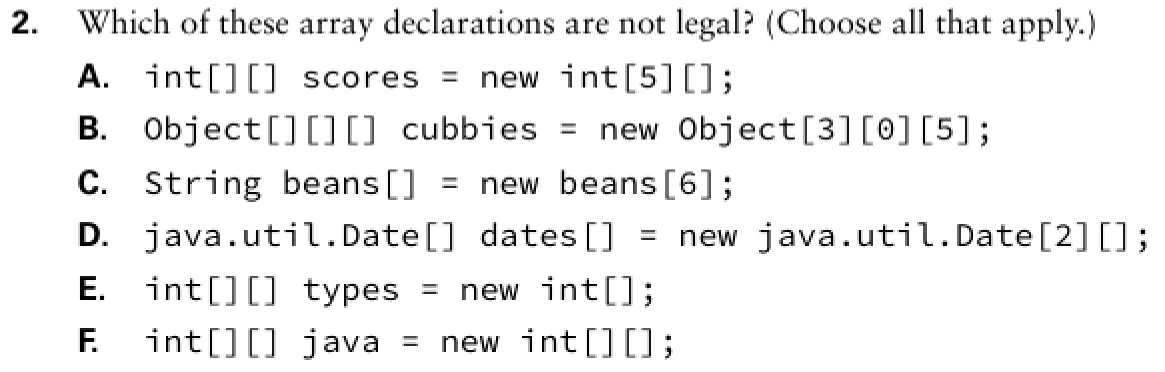
C. `5 tuna`

D. `5tuna`

E. `51tuna`

F. The code does not compile.

F: “anotherFish” es «String» asiganadole un «int»



2. Which of these array declarations are not legal? (Choose all that apply.)

A. `int[][] scores = new int[5][];`

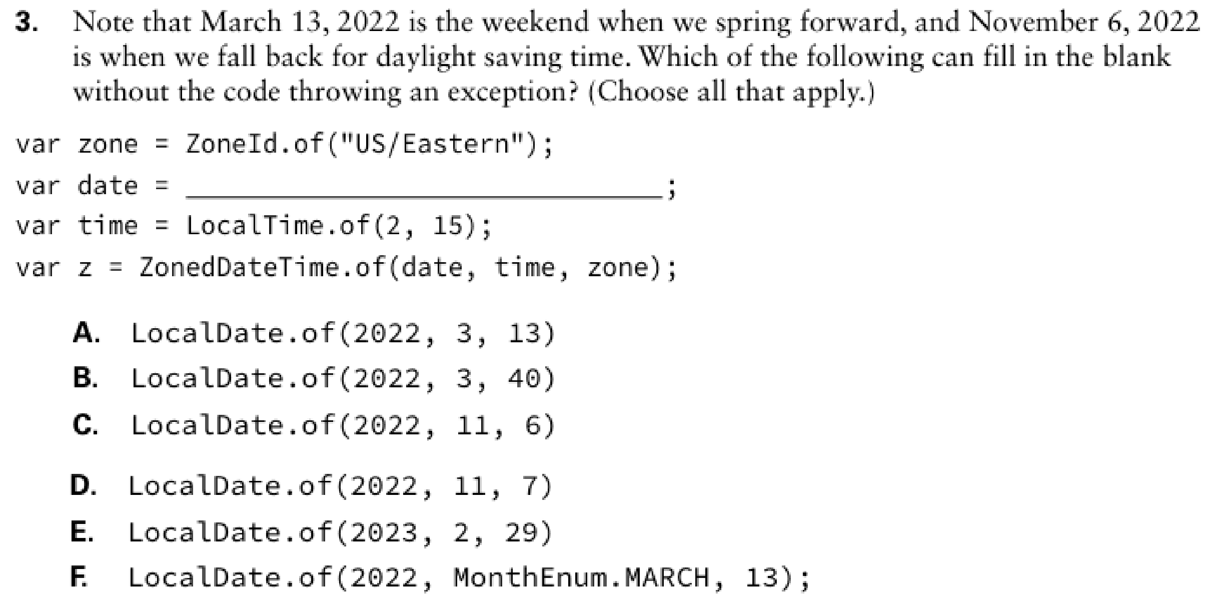
B. `Object[][][] cubbies = new Object[3][0][5];`

C. `String beans[] = new beans[6];`

D. `java.util.Date[] dates[] = new java.util.Date[2][];`

E. `int[][] types = new int[];`

F. `int[][] java = new int[][];`

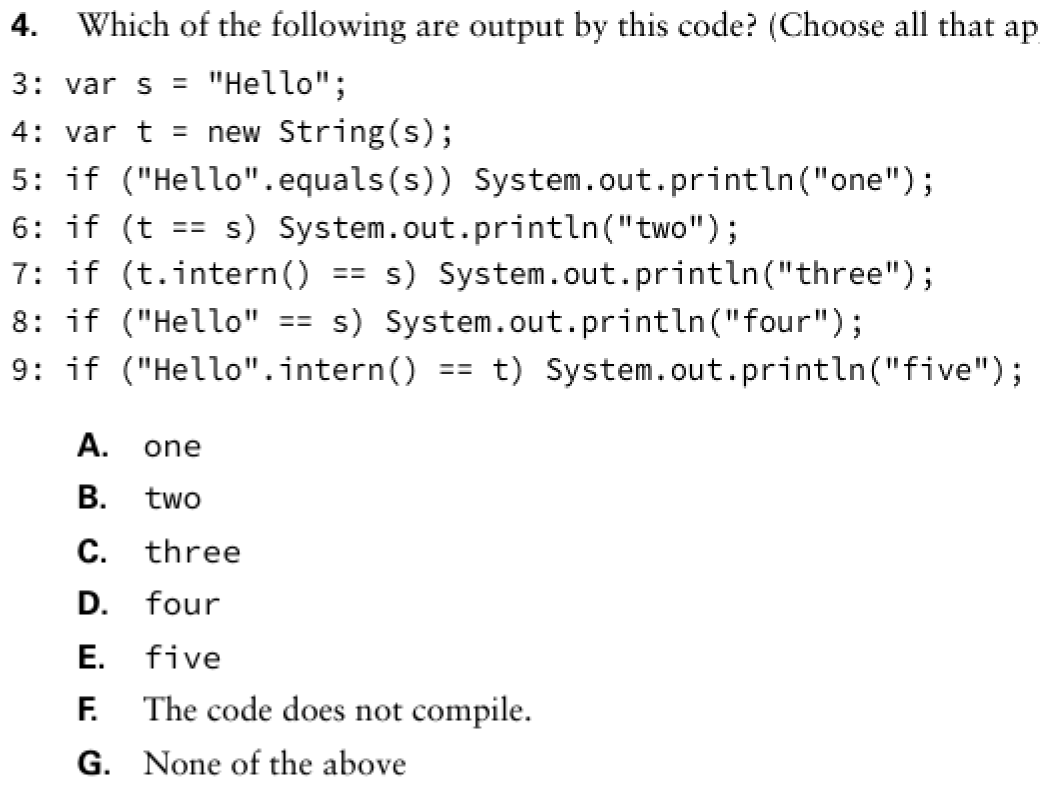


3. Note that March 13, 2022 is the weekend when we spring forward, and November 6, 2022 is when we fall back for daylight saving time. Which of the following can fill in the blank without the code throwing an exception? (Choose all that apply.)

```
var zone = ZoneId.of("US/Eastern");
var date = ______________________________;
var time = LocalTime.of(2, 15);
var z = ZonedDateTime.of(date, time, zone);
```

- A. `LocalDate.of(2022, 3, 13)`
- B. `LocalDate.of(2022, 3, 40)`
- C. `LocalDate.of(2022, 11, 6)`
- D. `LocalDate.of(2022, 11, 7)`
- E. `LocalDate.of(2023, 2, 29)`
- F. `LocalDate.of(2022, MonthEnum.MARCH, 13);`

A,C,D

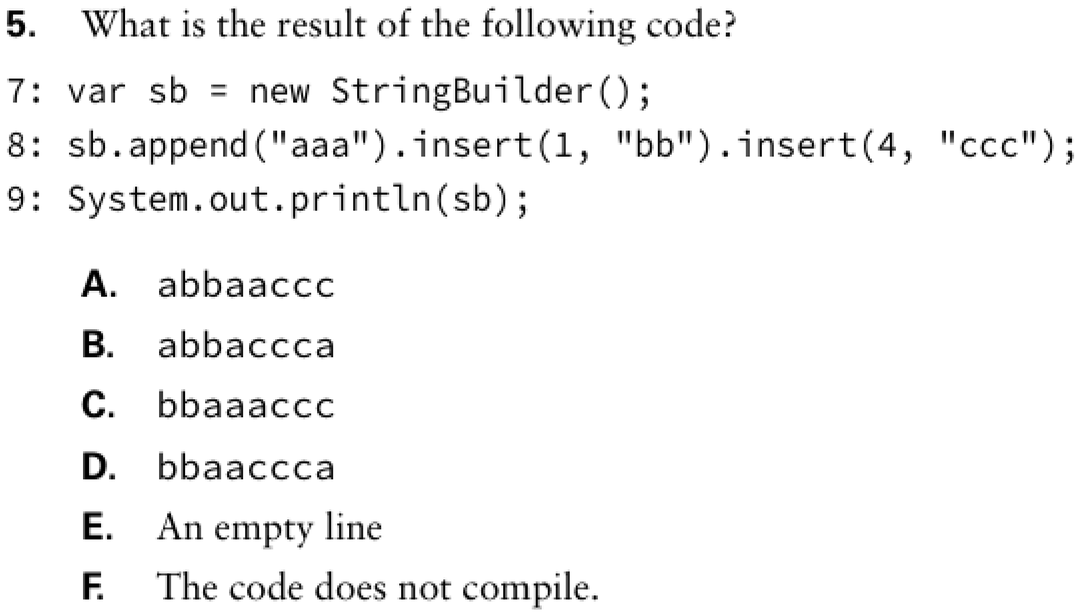


4. Which of the following are output by this code? (Choose all that apply.)

```
3: var s = "Hello";
4: var t = new String(s);
5: if ("Hello".equals(s)) System.out.println("one");
6: if (t == s) System.out.println("two");
7: if (t.intern() == s) System.out.println("three");
8: if ("Hello" == s) System.out.println("four");
9: if ("Hello".intern() == t) System.out.println("five");
```

- A. one
- B. two
- C. three
- D. four
- E. five
- F. The code does not compile.
- G. None of the above

A,C,D: En “A” y “D” apuntan al mismo objeto, en “C” se crea una “copia” de “Hello”

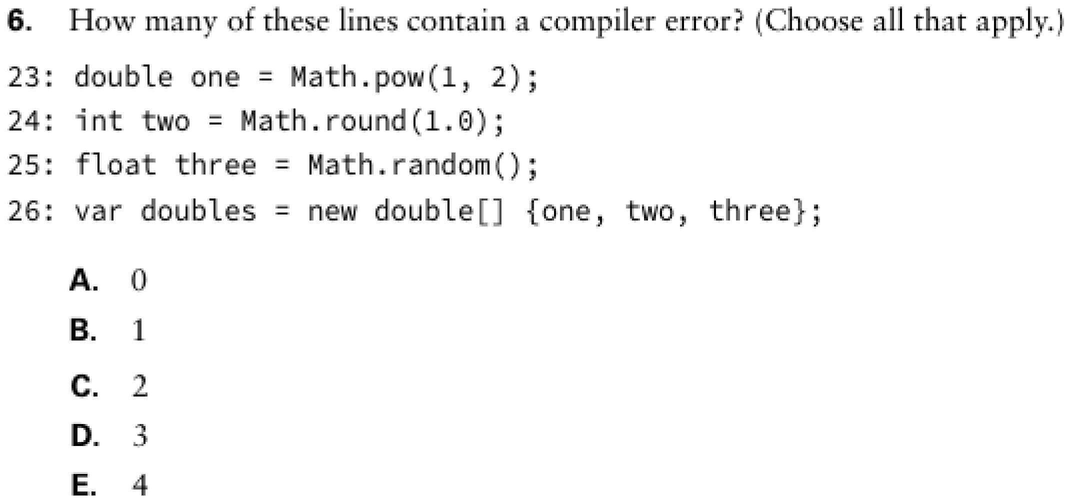


5. What is the result of the following code?

```
var sb = new StringBuilder();
sb.append("aaa").insert(1, "bb").insert(4, "ccc");
System.out.println(sb);
```

- **A.** abbaaccc
- **B.** abbaccca
- **C.** bbaaaccc
- **D.** bbaaccca
- **E.** An empty line
- **F.** The code does not compile.

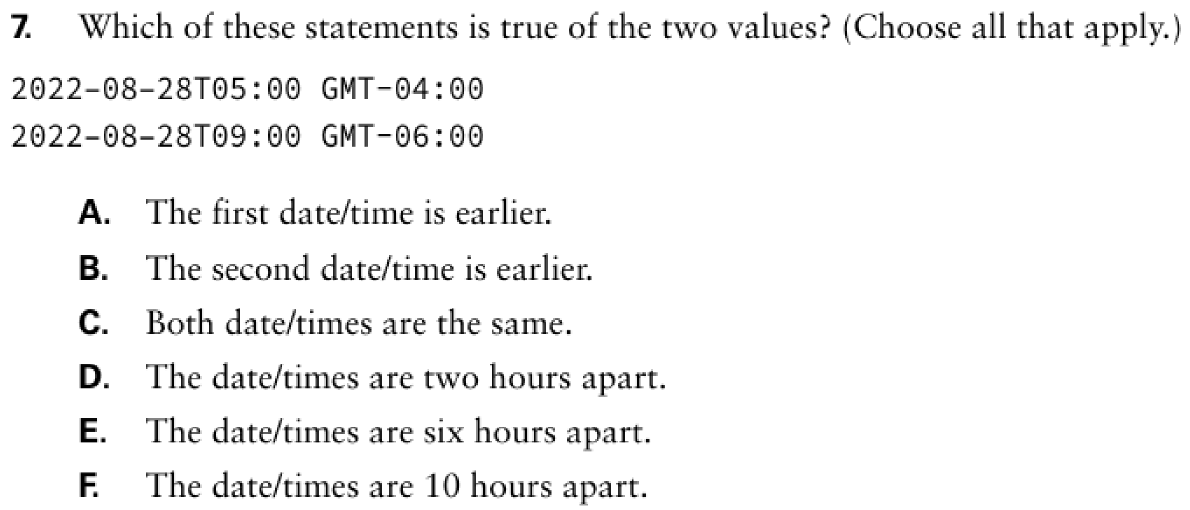
B: Se añade "aaa" y en la posición 1 se inserta "bb" resultando "abbaa" para después insertar en la posición 4 "ccc" resultando "abbaccca"



6. How many of these lines contain a compiler error? (Choose all that apply.)

```
double one = Math.pow(1, 2);
int two = Math.round(1.0);
float three = Math.random();
var doubles = new double[] {one, two, three};
```

- **A.** 0
- **B.** 1
- **C.** 2
- **D.** 3
- **E.** 4

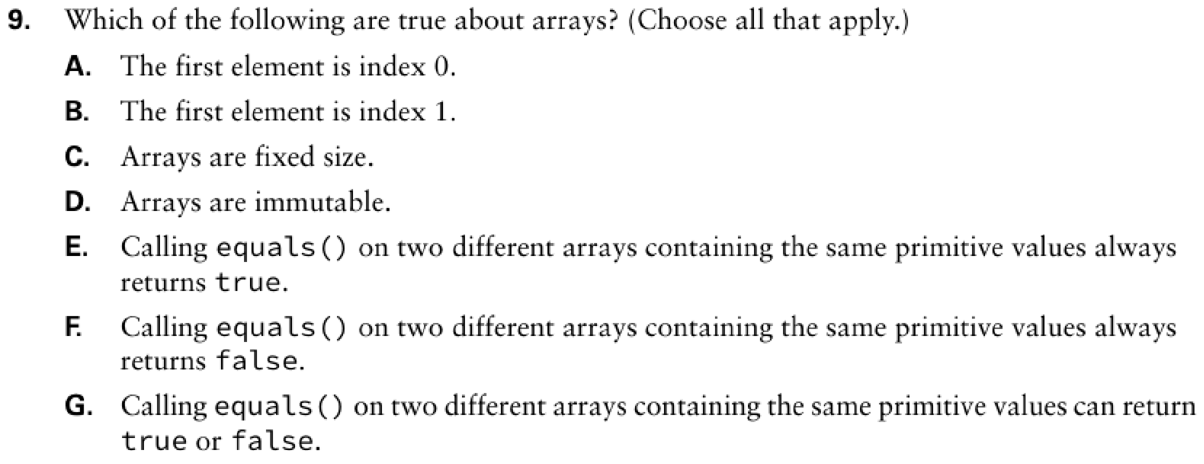


7. Which of these statements is true of the two values? (Choose all that apply.)

```
2022-08-28T05:00 GMT-04:00
2022-08-28T09:00 GMT-06:00
```

- **A.** The first date/time is earlier.
- **B.** The second date/time is earlier.
- **C.** Both date/times are the same.
- **D.** The date/times are two hours apart.
- **E.** The date/times are six hours apart.
- **F.** The date/times are 10 hours apart.

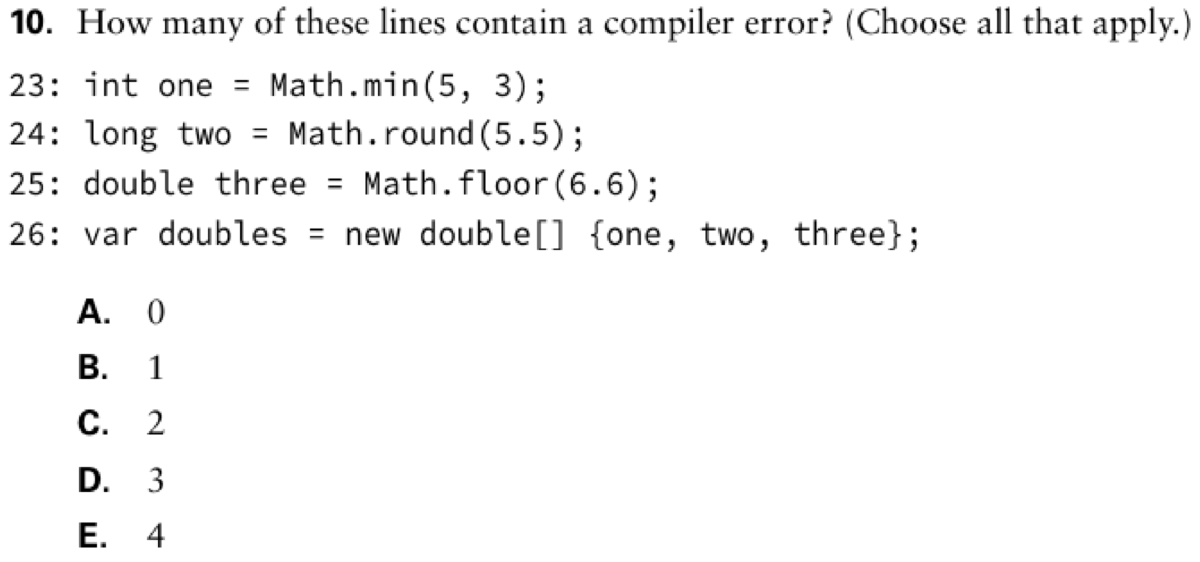
A,E



9. Which of the following are true about arrays? (Choose all that apply.)

- **A.** The first element is index 0.
- **B.** The first element is index 1.
- **C.** Arrays are fixed size.
- **D.** Arrays are immutable.
- **E.** Calling `equals()` on two different arrays containing the same primitive values always returns `true`.
- **F.** Calling `equals()` on two different arrays containing the same primitive values always returns `false`.
- **G.** Calling `equals()` on two different arrays containing the same primitive values can return `true` or `false`.

A,C,F

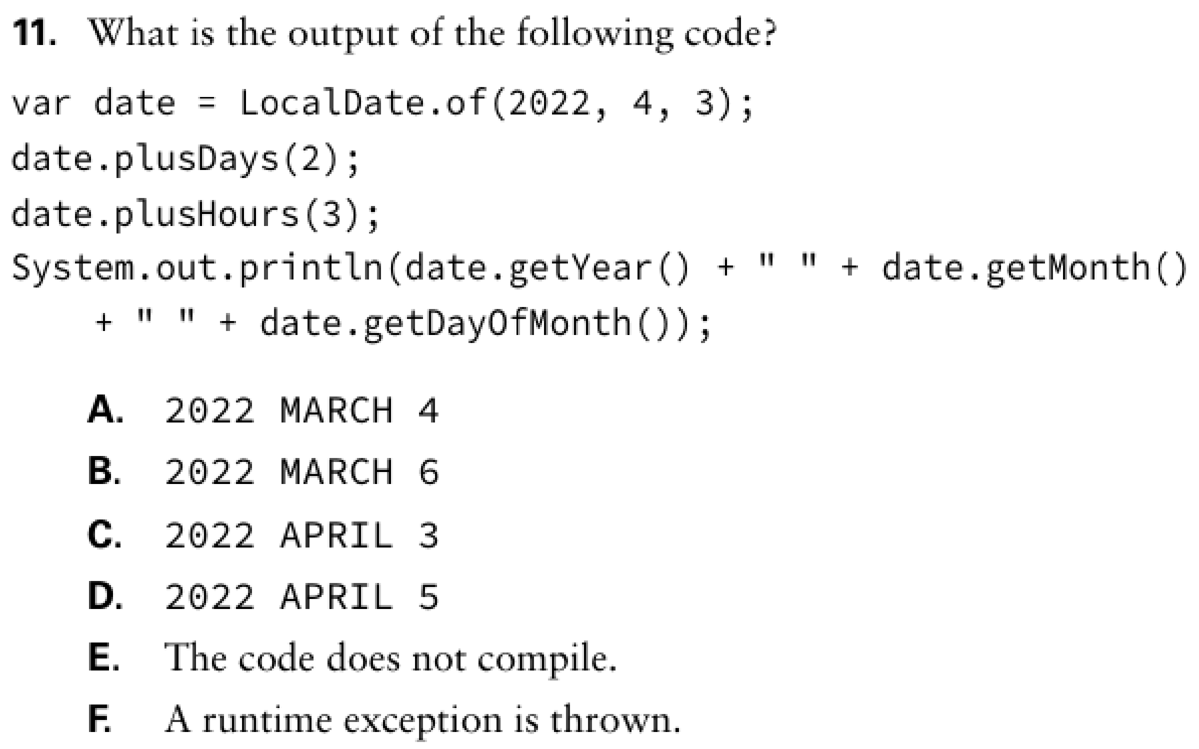


10. How many of these lines contain a compiler error? (Choose all that apply.)

```
23: int one = Math.min(5, 3);
24: long two = Math.round(5.5);
25: double three = Math.floor(6.6);
26: var doubles = new double[] {one, two, three};
```

- **A.** 0
- **B.** 1
- **C.** 2
- **D.** 3
- **E.** 4

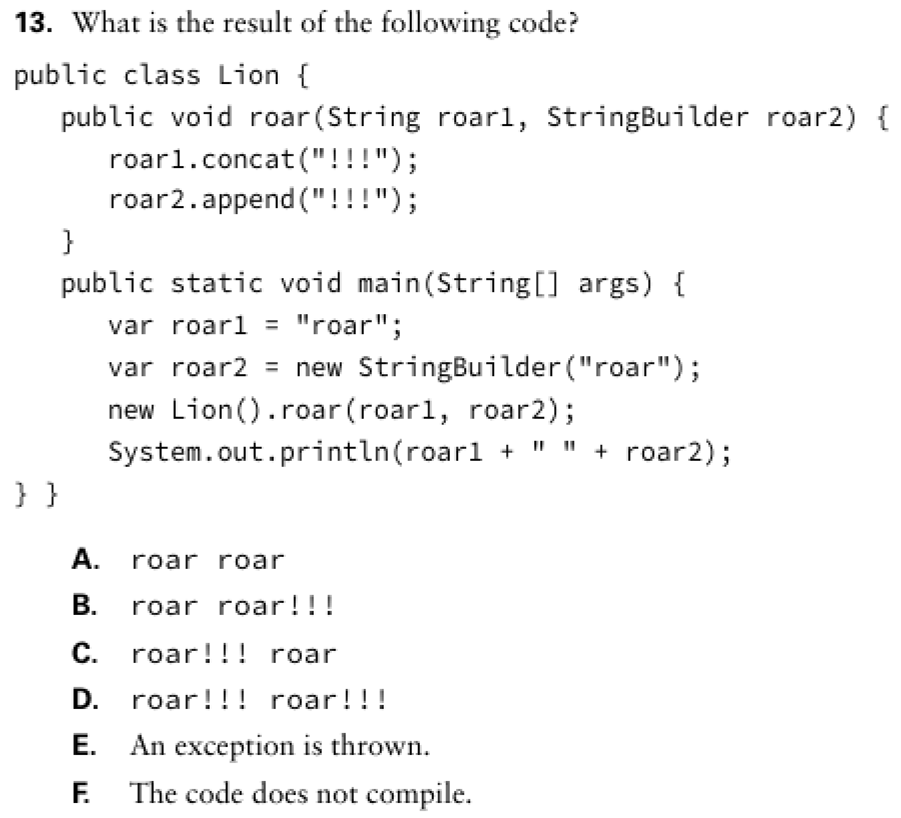
E



11. What is the output of the following code?

```
var date = LocalDate.of(2022, 4, 3);
date.plusDays(2);
date.plusHours(3);
System.out.println(date.getYear() + " " + date.getMonth()
    + " " + date.getDayOfMonth());
```

- **A.** `2022 MARCH 4`
- **B.** `2022 MARCH 6`
- **C.** `2022 APRIL 3`
- **D.** `2022 APRIL 5`
- **E.** The code does not compile.
- **F.** A runtime exception is thrown.



13. What is the result of the following code?

```
public class Lion {
   public void roar(String roar1, StringBuilder roar2) {
      roar1.concat("!!!");
      roar2.append("!!!");
   }
   public static void main(String[] args) {
      var roar1 = "roar";
      var roar2 = new StringBuilder("roar");
      new Lion().roar(roar1, roar2);
      System.out.println(roar1 + " " + roar2);
} }
```

- **A.** `roar roar`
- **B.** `roar roar!!!`
- **C.** `roar!!! roar`
- **D.** `roar!!! roar!!!`
- **E.** An exception is thrown.
- **F.** The code does not compile.

B: «String» es inmutable y «concat()» crea un nuevo «String»