# Java Language Practice

Use this key to check answers and read the explanations.

1. Which primitive type belongs in the blank in ___ ready = true?
   - A. boolean
   - B. int
   - C. char
   - D. double

   Correct answer: A. boolean

   The literal true has type boolean. Java uses this type for true and false values.

2. The declaration long stars = 5_000_000_000L uses an L after the number. What does the L indicate?
   - A. The literal has type double
   - B. The variable can be assigned only once
   - C. The literal has type long
   - D. The value is rounded to fit an int

   Correct answer: C. The literal has type long

   An L suffix gives the integer literal type long. Underscores separate groups of digits for readability.

3. What value does the Java expression -17 / 5 produce?
   - A. -4
   - B. -3
   - C. 3
   - D. -3.4

   Correct answer: B. -3

   Both operands have integer type. Java integer division rounds the quotient toward zero, so the result is -3.

4. What text does the Java expression "Tray " + 2 + 3 produce?
   - A. 23 Tray
   - B. Tray 5
   - C. 5 Tray
   - D. Tray 23

   Correct answer: D. Tray 23

   The additions group from left to right. The first + joins the string and 2 to make Tray 2, then the second appends 3.

5. An int[] named sizes contains {4, 7, 9} in that order. Which value does sizes[1] read?

A. 4
B. 7
C. 9
D. 1

Correct answer: B. 7
Java gives the first array element index 0. Index 1 reads the second element, which is 7.

6. What string does "planet".substring(1, 4) return?

A. lan
B. plane
C. lane
D. pla

Correct answer: A. lan
The substring begins at index 1 and ends before index 4. Those positions contain l, a, and n.

7. Basket has a field int count and a constructor Basket(int count) { this.count = count; }. What value does new Basket(6).count read?

A. Undefined
B. 0
C. 1
D. 6

Correct answer: D. 6
The right-hand count is the constructor parameter. The assignment stores its value, 6, in the new object's field this.count.

8. Both value and total are ints, starting at 5 and 0. The program runs do { total += value; value--; } while (value < 3); What is total afterward?

A. 4
B. 0
C. 5
D. 9

Correct answer: C. 5
The body runs once, adding 5 and reducing value to 4. Java then tests 4 < 3, so the loop ends.

9. Both a and b are initialized by their own new String("mint") expression. In order, what are the results of a.equals(b) and a == b?

A. true, false
B. true, true
C. false, true
D. false, false

Correct answer: A. true, false
The two strings contain the same text, so equals returns true. The new expressions create separate objects, so the reference comparison returns false.

10. What is total after this Java snippet? int total = 0; for (int i = 1; i < 5; i++) { if (i == 2) continue; total += i; }

A. 6
B. 10
C. 1
D. 8

Correct answer: D. 8
At i = 2, continue skips the addition and the loop proceeds with its update. The values added are 1, 3, and 4, giving 8.

11. The UTF-16 code unit for 'A' has the numeric value 65. What is the type and value of the Java expression 'A' + 1?

A. A String with the value A1
B. A char with the value 'B'
C. An int with the value 66
D. An int with the value 65

Correct answer: C. An int with the value 66
For this numeric addition, Java promotes the char operand to int. It adds 65 + 1 and produces the int value 66.

12. One class declares pick(int n), which returns "int", and pick(double n), which returns "double". What does the call pick(3) return?

A. double
B. int
C. 3
D. 3.0

Correct answer: B. int
The literal 3 has type int. The int overload is the more specific applicable choice for that argument.

13. An ArrayList<Integer> named values contains [7, 3, 1]. What is in the list after values.remove(1)?

A. [7, 3, 1]
B. [7, 3]
C. [3, 1]
D. [7, 1]

Correct answer: D. [7, 1]
The argument 1 is an int, so Java calls the overload that removes by index. Index 1 holds 3. Removing it leaves [7, 1].

14. Label declares an instance method text() that returns "plain". BrightLabel extends Label and overrides text() to return "bright". Given Label tag = new BrightLabel(), what does tag.text() return?

A. bright
B. plain
C. BrightLabel
D. null

Correct answer: A. bright
Java looks up the overriding instance method using the actual object's class. The object is a BrightLabel, so its text method returns bright.

15. The method adjust(int[] values) first sets values[0] = 9 and then sets values = new int[]{4}. The caller starts with int[] boxes = {1, 2} and calls adjust(boxes). What does boxes contain afterward?

A. [1, 2]
B. [4]
C. [9, 2]
D. [9]

Correct answer: C. [9, 2]
The parameter initially holds a copy of the reference to boxes, so the first assignment changes that array. Assigning a new array changes only the method's local parameter.