True-False Questions

For each of the following statements, determine whether the statement is true (T) or false (F). Write your answer letter, T or F, in the answer box at the right of each question.

1) You can declare a variable twice in a block.

2) The value of the expression `7/2` is `(3.5)`.

3) The expressions `1.0/2`, `1/2.0`, and `1.0/2.0` each evaluate to the value `(0.5)`.

4) You can always assign an `int` value to a `long` variable without loss of information.

5) A variable may be assigned a value only once in the program.

6) You can always convert a `switch` statement to an equivalent `if` statement.

7) The `break` keyword must be used in a `switch` statement; otherwise, a syntax error occurs.

8) A `break` statement is required after each `case` in a `switch` statement.

9) The following two `for` statements result in the same value in `total`.

```
for ( int k = 0; k < 7; ++k )
{
  total += k;
}
```

```
for ( int k = 0; k < 7; k++ )
{
  total += k;
}
```

10) A variable's scope is the part of the program that has access to the variable.

11) The "and" operator `&&` returns `false` when at least one of its operand is `false`.

12) You can always convert a `for` loop to a while `loop`.

13) A variable declared in the `for` loop control can be used after the loop exits.

14) A `continue` statement can be used only in a loop.

15) If a non-letter character is passed to the `toLowerCase` or `toUpperCase` method, it is returned unchanged.

Multiple Choice Questions

For each of the following multiple-choice questions, select one or more answer choices that best complete a given statement or that best answer the question. If a question does not specify how many answer choices to select from a list of choices, select only one answer. Write your answer in the answer box at the right of each question.

16) To add `x` to `y` and store result in `y`, you write

A) `y += x;`

B) `x = y + x;`

C) `x = Y + x;`

D) `y = x + y;`

E) `x += y;`

17) To declare an `int` variable `a` with initial value 9, you write

A) `int a = 9L;`

B) `int a = 9l;`

C) `int a = 9F;`

D) `int a = 9f;`

E) `int a = 9;`

F) `int a = '9';`

G) `int a = 9.0;`

18) Which of the Boolean expressions below has incorrect syntax?

A) `((3 == 1 + 2)) && (3 > 4)`

B) `(true) && (false)`

C) `(false) || !(4 > 3)`

D) `!((x > 1) && (x < 1))`

E) `(x > 1) || (x < 1)`

F) `(x != 1) || (x = 1)`

19) Which of the following is the correct expression of character `a`?

A) `'a'`

B) `"a"`

C) `(char)a`

D) None of the above.

20) Which of the following identifier is a variable, according to Java naming conventions?

A) `APPLE_PIE`

B) `chips`

C) `Fruit`

D) None of the above

21) Which of the following identifier is a class, according to Java naming conventions?

A) `APPLE_PIE`

B) `chips`

C) `Fruit`

D) None of the above

22) A Java statement ends with a _____ .

A) comma (,)

B) semicolon (;)

C) period (.)

D) closing brace

23) Which of these data types requires the least amount of memory?

A) `float`

B) `double`

C) `short`

D) `byte`

24) An `int` variable can hold _____ .

A) `'?'`

B) `13`

C) `12.3`

D) `true`

25) The not equal comparison operator in Java is _____ .

A) `<>`

B) `!=`

C) `!==`

D) `#`

26) If a program compiles fine, but it terminates abnormally at runtime, then the program suffers _____ .

A) a syntax error

B) a runtime error

C) a logic error

27) Let `p = 9`. What is `p` after evaluating the expression `(++p + p++)`?

A) 9

B) 10

C) 11

D) 12

28) Suppose you define a Java class as follows:

```
public class Sample
{
}
```

In order to compile this class, the class should be stored in a file named

A) `Sample.class`

B) `Sample.doc`

C) `Sample.txt`

D) `Sample.java`

E) Any name with extension `.java`

29) The command to run a Java application in `Sample.class` is

A) `java Sample`

B) `java Sample.class`

C) `javac Sample.java`

D) `javac Sample`

E) `JAVAC Sample`

30) What is `"July" + 1 + 1*2` ?

A) `July11*2`

B) `July4`

C) `July12`

D) `July3`

31) What is the output of the following code segment?

```
String sentence = "The␣cow␣jumped␣over␣the␣moon";
System.out.println( sentence.charAt(5) );
```

A) `c`

B) `o`

C) `w`

D) `cow`

32) What will be the value of `str` after the following code has been executed?

```
String str = "abracadabra";
str = str.substring(4);
```

A) `abra`

B) `cadabra`

C) `adabra`

D) `acadabra`

33) What will be the value of `loc` after the following code is executed?

```
int loc;
String str = "The cow jumped over the moon.";
loc = str.indexOf("cow");
```

A) 3

B) 4

C) 5

D) -1

34) What is the result of the following statement?

```
10 + 5 * 3 - 20
```

A) `-5`

B) `5`

C) `25`

D) `-50`

35) Which of the following will correctly convert the data type, if `x` is an integer and `y` is a double?

A) `x = <int>y;`

B) `x = int y;`

C) `x = (int)y;`

D) `x = y;`

36) Variables are classified according to their

A) value

B) data type

C) names

D) location in the program

37) What will be the value of `ans` after the following code has been executed?

```
int x = 90, y = 55, ans = 10;
if ( x == y);
    ans *= 2;
```

A) `10`

B) `145`

C) `20`

D) No value, there is a syntax error

38) If `str1` and `str2` are both `String`s, which of the following will correctly test to see if `str1` is less than `str2`?

```
if( str1 < str2 )                // 1
if( str1.equals(str2) < 0 )      // 2
if( str1.compareTo(str2) < 0 )   // 3
```

A) 1, 2, and 3 will all work

B) 2

C) 3

D) 2 and 3

39) If a loop does not contain within itself a way to terminate, it is called

A) A `while` loop

B) A `do-while` loop

C) A `for` loop

D) An infinite loop

40) What will be the value of `x` after the following code is executed?

```
int x = 10, y = 20;
while (y < 100)
{
    x += y;
}
```

A) 90

B) 110

C) 210

D) This is an infinite loop

41) What will be the value of x after the following code is executed?

```
int x = 10;
do
{
    x *= 10;
}
while (x > 10);
```

A) 10

B) 200

C) This is an infinite loop.

D) The loop will not be executed, the initial value of `x > 10` is `false`.

42) A loop that repeats a specific number of times is known as a(n)

A) Conditional loop

B) Sentinel loop

C) Counter-controlled loop

D) Infinite loop

43) What will be the value of x after the following code is executed?

```
int x = 10;
for (int y = 5; y < 20; y +=5)
{
   x += y;
}
```

A) 40

B) 25

C) 30

D) Invalid `for` statement

44) Before entering a loop to compute a running total, the program should first

A) Read all the values into main memory

B) Set the accumulator where the total will be kept to an initial value, usually zero

C) Know exactly how many values there are to total

D) Set all variables to zero

45) Which of the following assignment statements are incorrect?

A) `i = j = k = 1;`

B) `i = 1; j = 1; k = 1;`

C) `i = 1 = j = 1 = k = 1;`

D) `i == j == k == 1;`

46) The expression `( 46 / 4 )` will evaluate to

A) 10

B) 11

C) 11.5

D) 12

47) Which of the following expressions will evaluate to `1` ?

A) `2 % 1`

B) `11 % 4`

C) `20 % 5`

D) `19 % 6`

48) What would the statement `System.out.print('z' - 'a')` print?

A) 25

B) 26

C) a

D) z

49) Suppose `x = 1`, `y = -1`, and `z = 1`. What is the output of the following poorly indented statement?

```
if (x > 0)
   if (y > 0)
      System.out.println("x > 0 and y > 0");
else if (z > 0)
      System.out.println("x < 0 and z > 0");
```

A) `x > 0 and y > 0;`

B) `x < 0 and z > 0;`

C) `x < 0 and z < 0;`

D) `no output.`

50) What is the value of `balance` after the following code is executed?

```
int balance = 10;

while (balance >= 1) {
  if (balance < 9) break;
  balance = balance - 9;
}
```

A) `-1`

B) 0

C) 1

D) 2

51) How many times the following code prints `Welcome to Java`?

```
int count = 0;
do
{
  System.out.println( "Welcome to Java");
} while (++count < 5);
```

A) 3

B) 4

C) 5

D) 6

E) 0

52) What is `sum` after the following loop terminates?

```
int sum = 0;
int item = 0;
do
{
    item++;
    sum += item;
    if (sum > 4) break;
} while (item < 5);
```

A) 5

B) 6

C) 7

D) 8

53) What is the output of the following fragment?

```
int i = 1;
int j = 1;
while (i < 5)
{
  i++;
  j = j * 2;
}
System.out.print( j );
```

A) 4

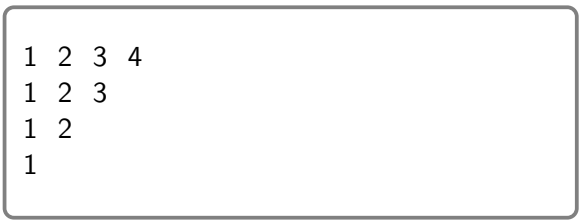
B) 8

C) 16

D) 32

E) 64

54) Which of the following loops will produce the following output?



```
1 2 3 4
1 2 3
1 2
1
```

A)

```
for (int i = 5; i > 0; i--)
{
  for (int j = 1; j < i; j++)
    System.out.print( j + " ");
  System.out.println( );
}
```

B)

```
for (int i = 1; i < 5; i++)
{
  for (int j = 1; j < i; j++)
    System.out.print( j + " ");
  System.out.println( );
}
```

C)

```
int i = 0;
while (i < 5)
{
  for (int j = 1; j < i; j++)
    System.out.print( j + " ");
  System.out.println( );
  i++;
}
```

D)

```
int i = 5;
while (i > 0)
{
  for (int j = 1; j < i; j++)
    System.out.print( j + " ");
  System.out.println( );
  i--;
}
```

55) Consider the folllowing declarations and write a Java code segment that swaps the object bound to `pet1` with the object bound to `pet2`.

```
String pet1 = new String("dog");
String pet2 = new String("cat");
```

56) Consider the folllowing code segment.

```
int a = 9, b = 6, c = 4;
if(( a < 9 ) && ( b != 6 ))
   System.out.println("Yes");
else if (c < 9 || b == 6 )
   System.out.println("No");
else
   System.out.println("Maybe");
```

What does the code segment output?

57) Write a Java program that prompts for and reads an integer value. The program should display whether the input value is positive, negative, or zero.

58) Write a Java program that prompts for and inputs two integer values. The program should output the larger of the input values.

59) Write a program that sorts three integer values.

60) For each of the following `for` loops, indicate how often the loop body executes? assume that the loop control variable `k` is not changed in the loop body.

A) `for(int k = 1; k <= 10; k++) . . .`

B) `for(int k = 10; k >= 1; k++) . . .`

C) `for(int k = 0; k < 10; k++) . . .`

D) `for(int k = -10; k <= 20; k += 2) . . .`

E) `for(int k = -10; k <= 20; k += 3) . . .`

61) Rewrite the following `do` loop into a `while` loop.

```
int x = 0;
int s = 0;
int k = 1;
do
{
   x += k;
   s += x;
   k++;
}while(k <= 10);
```

62) Assume the following declarations:

```
int x = 1;
boolean isCold = false;
char initial = 'L';
char code = 'Y';
String english = "hi";
String italian = "ciao";
boolean q = (5 == 6);
```

For each of the following expressions, indicate whether or not it contains a synyax error. If there is no error, indicate the value of the expression.

A) `((x == x / 2 * 2 ) || (x % 2 == 1))`

B) `(true || (5 > 6))`

C) `(isCold || (x < 0))`

D) `initial == code`

E) `!!q`

F) `(0 <= x <= 10)`

G) `(english > italian)`

H) `(isCold) ? 4 : 10`

I) `initial = code`

J) `"italian".equals(italian)`