

Note: Correct responses are based on Java, J2sdk v 7.0, from Sun Microsystems, Inc. All provided code segments are intended to be syntactically correct, unless otherwise stated (i. e. `error` is an answer choice) and any necessary Java 2 Standard Packages have been imported. Ignore any typographical errors and assume any undefined variables are defined as used.

QUESTION 1	
What is 1101_3 minus 11_9 ?	
A. 1000_3 B. 1000_9 C. 1202_3 D. 1011_3 E. 37_{10}	
QUESTION 2	
What is output by the code to the right?	<pre>int n = 36; double d = 6f; System.out.println(n/d);</pre>
A. 1.0 B. 6.0 C. 30.0 D. 30 E. There is no output due to a syntax error.	
QUESTION 3	
What is output by the code to the right?	<pre>int number = 15; number += 3; System.out.println(number);</pre>
A. 18 B. 12 C. 21 D. 15 E. There is no output due to a syntax error.	
QUESTION 4	
What is output by the code to the right?	<pre>int sum = 0; for(int i=10; i<15; i++) sum += i++; System.out.println(sum);</pre>
A. 3 B. 5 C. 60 D. 36 E. 15	
QUESTION 5	
What is output by the code to the right?	<pre>String m = "apluscompsci"; m = m.substring(5); System.out.println(m);</pre>
A. <code>apluscompsci</code> B. <code>aplus</code> C. <code>compsci</code> D. There is no output due to a syntax error. E. There is no output due to a runtime error.	
QUESTION 6	
What is output by the code to the right?	<pre>int a[] = {11,3,5,2}; System.out.println(a[a[a[0]/3]]);</pre>
A. 5 B. 2 C. 3 D. There is no output due to a syntax error. E. There is no output due to a runtime error.	
QUESTION 7	
What is output by the code to the right?	<pre>boolean b1 = false, b2 = true; int num = 1; if((b2 num++ > 0) && (b1 num++ >= 1)) num++; System.out.println(num);</pre>
A. <code>true</code> B. <code>false</code> C. 4 D. 2 E. 3	
QUESTION 8	
What is output by the code to the right?	<pre>System.out.print(5); System.out.println("n"+2+3);</pre>
A. $5n$ B. $5n2$ C. $5n23$ D. $5n5$ E. There is no output due to a syntax error.	

<p>QUESTION 9</p> <p>What is output by the code to the right?</p> <p>A. 0 B. 11 C. 8 D. 5 E. 3</p>	<pre>System.out.println(5+3%4*2);</pre>
<p>QUESTION 10</p> <p>Which of the following could fill <*1>, allowing the program to still compile?</p> <p>I. ArrayList<Integer> II. ArrayList III. ArrayList<int></p> <p>A. I B. II and III only C. I and III only D. I, II, and III E. I and II only</p>	<pre>ArrayList<Integer> n = new <*1>();</pre>
<p>QUESTION 11</p> <p>What is output by the code to the right?</p> <p>A. 2 B. 1 C. 2.0 D. There is no output due to a syntax error. E. There is no output due to a runtime error.</p>	<pre>int num = Math.round(1.5); System.out.println(num);</pre>
<p>QUESTION 12</p> <p>What is output by the code to the right?</p> <p>A. hi buy B. buy buy C. hibuy D. There is no output due to a syntax error. E. There is no output due to a runtime error.</p>	<pre>String f = "%2s %2s"; System.out.printf(f, "hi", "buy");</pre>
<p>QUESTION 13</p> <p>What is output by the code to the right?</p> <p>A. fun\ny B. fun ny C. fun\\y D. There is no output due to a syntax error. E. There is no output due to a runtime error.</p>	<pre>System.out.print("fun\\ny");</pre>
<p>QUESTION 14</p> <p>What is output by the code to the right?</p> <p>A. 10 B. 7 C. 3 D. There is no output due to a syntax error. E. There is no output due to a runtime error.</p>	<pre>int[][] a = new int[2][]; a[0] = new int[]{1,2}; a[1] = new int[]{3,4}; int sum = 0; for(int i=0; i<a.length; i++) for(int j=0; j<a[i].length; j++) sum += a[i][j]; System.out.println(sum);</pre>
<p>QUESTION 15</p> <p>What is output by the code to the right?</p> <p>A. 10 B. 30 C. 20 D. There is no output due to a syntax error. E. There is no output due to a runtime error.</p>	<pre>int count = 0; for(int i=0; i<5; i++) for(int j=0; j<i; j++, count+=j) count++; System.out.println(count);</pre>

<p>QUESTION 16</p> <p>What is output by the code to the right?</p> <p>A. \$2\$1\$2\$1\$2\$1 B. one1two2three3 C. 1one2two3three D. one1\$2\$1\$2\$1 E. There is no output due to a runtime error.</p>	<pre>String str = "one1two2three3"; String rx = "([a-z]+)(\\d+)"; str.replaceAll(rx, "\$2\$1"); System.out.println(str);</pre>
<p>QUESTION 17</p> <p>What is output by the code to the right?</p> <p>A. 1 B. 2 C. 1 D. 3 E. 5</p>	<pre>System.out.println(2^3&5);</pre>
<p>QUESTION 18</p> <p>What is output by the code to the right?</p> <p>A. true B. false C. 1 D. 0 E. StrongArm</p>	<pre>System.out.println(true false^true);</pre>
<p>QUESTION 19</p> <p>What is output by the code to the right?</p> <p>A. 3 B. 7 C. 0 D. There is no output due to a syntax error. E. There is no output due to a runtime error.</p>	<pre>ArrayList<Long> a; a = new ArrayList<Long>(); a.add(2); a.add(4); a.add(1); System.out.println(a.size());</pre>
<p>QUESTION 20</p> <p>What is output by the code to the right?</p> <p>A. 7 B. 2 C. 15 D. There is no output due to a syntax error. E. There is no output due to a runtime error.</p>	<pre>int num = 20 / 2; int num2 = 42 % (num = num * 2); System.out.println(num2);</pre>
<p>QUESTION 21</p> <p>What is output by the code to the right?</p> <p>A. AHbla^every^thing B. AHblaAHeveryAHthing C. blaAHeveryAHthing D. There is no output due to a syntax error. E. There is no output due to a runtime error.</p>	<pre>String mouse = "bla^every^thing"; mouse = mouse.replaceAll("^", "AH"); System.out.println(mouse);</pre>

QUESTION 22

What is returned by the method call `rec(20)`?

- A. 20105
- B. 2010
- C. 51020
- D. 1020
- E. There is no output due to a runtime error.

```
public String rec(int v) {
    if(v%2==0)
        return rec(v/2)+v;
    return "";
}
```

QUESTION 23

What is returned by the method call `rec(8)`?

- A. 248
- B. 8421
- C. 842
- D. 421
- E. There is no output due to a runtime error.

QUESTION 24

What is output by the line marked `//1` in the client code to the right?

- A. 1 2 B. 1 1 C. 2 1 D. 11 12 E. 12 11

```
class A {
    public static int snum = 1;
    public int num = 11;
    public int mnum() {
        return 21;
    }
}
```

QUESTION 25

What is output by the line marked `//2` in the client code to the right?

- A. 21 21 B. 11 11 C. 21 22 D. 11 12 E. 1 1

```
class B extends A {
    public static int snum = 2;
    public int num = 12;
    public int mnum() {
        return 22;
    }
}
```

QUESTION 26

What is output by the line marked `//3` in the client code to the right?

- A. 21 21 B. 21 22 C. 22 12 D. 22 21 E. 44

```
////////////////////////////////////
//client code
A a = new A();
B b = new B();
String t = "";

t = a.snum+" "+b.snum;
System.out.println(t);    //1

t = a.num+" "+b.num;
System.out.println(t);    //2

t = a.mnum()+" "+b.mnum();
System.out.println(t);    //3
```

<p>QUESTION 27</p> <p>What is output by the code to the right?</p> <p>A. 18 B. 8 C. 6 D. 10 E. 12</p>	<pre>int N = 6; int count = 0; for(int i=0; i<N; i++) for(int j=1; j<N; j*=2) count++; System.out.println(count);</pre>
<p>QUESTION 28</p> <p>What is the worst case Big O of the code to the right? Choose the most restrictive correct answer.</p> <p>A. N^2 B. $2N$ C. $N^2 \log_2 N$ D. $2N^2$ E. $N \log_2 N$</p>	
<p>QUESTION 29</p> <p>What is returned by the method call <code>num(3)</code>?</p> <p>A. 2 B. 6 C. 3 D. 1 E. There is no output due to a runtime error.</p>	<pre>public static int num(int n) { if(n==0 n==1) return 1; return num(n-1)+num(n-2)+n-1; }</pre>
<p>QUESTION 30</p> <p>What is returned by the method call <code>num(5)</code>?</p> <p>A. 5 B. 22 C. 8 D. 21 E. There is no output due to a runtime error.</p>	
<p>QUESTION 31</p> <p>What is output by the code to the right?</p> <p>A. 18 B. 10 C. 73 D. 15 E. There is no output due to a syntax error.</p>	<pre>int number = 15; number &= 7; number += 3; System.out.println(number);</pre>
<p>QUESTION 32</p> <p>What is returned by the method call <code>thing(6)</code>?</p> <p>A. 4 B. 3 C. 5 D. The method does not return due to an infinite loop. E. There is no output due to a runtime error.</p>	<pre>public int thing(int s){ int[] num; num = new int[]{1,3,6,4,0,12,7, 6,3,2,3,0,6,0,0}; Queue<Integer> q; q = new LinkedList<Integer>(); q.add(0); int count = 0; while(num[q.peek()] != s) { int v = q.remove(); q.add(num[v+1]); q.add(num[v+2]); count++; } return count; }</pre>
<p>QUESTION 33</p> <p>What is returned by the method call <code>num(3)</code>?</p> <p>A. 1 B. 0 C. 5 D. The method does not return due to an infinite loop. E. There is no output due to a runtime error.</p>	
<p>QUESTION 34</p> <p>In the context of the program to the right, what data structure does <code>num</code> represent.</p> <p>A. Maze B. Binary Search Tree C. Set D. Binary Tree E. Stack</p>	

QUESTION 35

What is output by the line marked **//1** in the client code to the right?

- A. [abc, 234, vds, ghj]
- B. [ghj, vds, 234, abc]
- C. []
- D. [234, abc, ghj, vds]
- E. The output cannot be determined at this time.

```
Map<String, String> map;
Stack<String> stack;
Set<String> set;
ArrayList<String> al;

map = new TreeMap<String, String>();
stack = new Stack<String>();
set = new TreeSet<String>();
al = new ArrayList<String>();
```

QUESTION 36

What is output by the line marked **//2** in the client code to the right?

- A. [abc, 234, vds, ghj]
- B. [234, abc, ghj, vds]
- C. [ghj, vds, 234, abc]
- D. [ghi, vds, 234, abc]
- E. The output cannot be determined at this time.

```
stack.push("abc");
stack.push("234");
stack.push("vds");
stack.push("ghj");

while(!stack.isEmpty())
{
    al.add(stack.pop());
    set.add(al.get(al.size()-1));
}
```

QUESTION 37

What is output by the line marked **//3** in the client code to the right?

- A. {ghj=234, vds=abc, 234=ghj, abc=vds}
- B. {234=ghj, abc=vds, ghj=234, vds=abc}
- C. {234=234, abc=abc, ghj=ghj, vds=vds}
- D. {ghj=ghj, vds=vds, 234=234, abc=abc}
- E. The output cannot be determined at this time.

```
Iterator<String> it = set.iterator();
for(String s : al)
    map.put(s, it.next());

System.out.println(al);    //1
System.out.println(set);   //2
System.out.println(map);   //3
```

QUESTION 38

What is output by the code to the right?

- A. 5
- B. 5n
- C. 15n
- D. 1n
- E. There is no output due to a syntax error.

```
long val = 5;
switch(val)
{
    case 1L:
        System.out.println(1);
    case 5L:
        System.out.println(5);
    case 7L:
        System.out.println(7);
    case 9L:
        System.out.println(9);
    default:
        System.out.println("n");
}
```

QUESTION 39

What is output by the line marked **//1** in the client code to the right?

- A. `out.println("things");`
- B. `out.pantln("tangs");`
- C. `outaprantln("thangs");`
- D. `out.pantln("things");`
- E. There is no output due to a runtime error.

```
String s;
String s1;
String s2;
s = "out.println(\"things\")";
s1 = s.replaceAll(".", "a");
s2 = s.replaceAll("[.i]", "a");
System.out.println(s1);    //1
System.out.println(s2);    //2
```

QUESTION 40

What is output by the line marked **//2** in the client code to the right?

- A. `out.println("things");`
- B. `outaprantln("thangs");`
- C. `out.pantln("tangs");`
- D. `outaprintln("thangs");`
- E. The output cannot be determined at this time.