

Note: Correct responses are based on Java, J2sdk v 5.0, 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	
$100101_2 + 345_8 = ?$ A. 412_8 B. 390_8 C. 456_8 D. 402_8 E. 42_8	
QUESTION 2	<pre>int x = 31, y = 7, z = 5; x %= y + z; out.println(x);</pre>
What is the output? A. 6 B. 5 C. 8 D. 1 E. 7	
QUESTION 3	<pre>int x = 34, y = 5; double z; z = x / y; out.println(z);</pre>
What is the output? A. 6 B. 6.4 C. 6.8 D. 4 E. 6.0	
QUESTION 4	
What is the output? A. x 215.736f B. x215.736000f C. x000215.736f D. 215.735642010.3f E. x215.7	<pre>double x = 215.735642; out.printf("x%010.3ff", x);</pre>
QUESTION 5	
What is the output of line 1? A. 16 B. 15 C. 17 D. 17.5 E. 18	<pre>int x = 5, y = 6, z = 7; x = 3 * x - y / 4 + z % 3; out.println(x); //line 1</pre>
QUESTION 6	<pre>x = 6; y = 9; z = x * y / x * 2; out.println(z); //line 2</pre>
What is the output of line 2? A. 12 B. 18 C. 16 D. 6 E. 15	
QUESTION 7	
What replaces <code>< *1 ></code> so <code>c</code> is an array of the characters in <code>s</code> ? A. <code>char [] c = s.toCharArray();</code> B. <code>char [] c = String.toCharArray(s);</code> C. <code>char [] c = Arrays.toCharArray(s);</code> D. <code>char [] c = Object.toCharArray(s);</code> E. <code>char [] c = Arrays.toCharArray();</code>	<pre>String s = "OSCAR"; < *1 > int len = c.length; for(int x=3; x < len+3; x++) out.print(c[x%len]);</pre>
QUESTION 8	
Assume <code>< *1 ></code> was replaced correctly. What is the output? A. OSCAR B. RACSO C. CAROS D. SCARO E. AROSC	
QUESTION 9	
What is the output? A. 02400 B. 02460 C. 13000 D. 13500 E. <code>ArrayIndexOutOfBoundsException</code> is thrown	<pre>int a[] = new int[10]; for(int x = 0; x < 5; x++) a[x] = x; for(int x = 0; x < 5; x++) out.print(a[2 * x + 1]);</pre>

<p>QUESTION 10</p> <p>What is the value of <code>music(1,10)</code>?</p> <p>A. 10 B. 35 C. 14</p> <p>D. 28 E. infinite recursion</p>	<pre>public static int music(int rock, int roll) { if(rock == 7) return rock; else return (rock + music(rock+1, roll-1)); }</pre>
<p>QUESTION 11</p> <p>What is the value of <code>music(5,10)</code>?</p> <p>A. 18 B. 25 C. 7</p> <p>D. 22 E. infinite recursion</p>	
<p>QUESTION 12</p> <p>What is the output?</p> <p>A. 110110 B. 111000</p> <p>C. 000110 D. 101010 E. 111001</p>	<pre>for(int i=0; i<2; i++) for(int j=2; j>=0; j--) out.print((i<j) ? i : j);</pre>
<p>QUESTION 13</p> <p>How many times will line 1 be executed?</p> <p>A. 55 B. 25 C. 45 D. 50 E. 100</p>	<pre>int[][] m = new int[5][10]; int i=0, j=0; while(i < m.length){ j=m[0].length-1; while(j > 0) { m[i][j] = i + j; j--; //line 1 } i++; } out.println(m[0][4]); //line 2 out.println(m[3][0]); //line 3</pre>
<p>QUESTION 14</p> <p>What is the output of line 2?</p> <p>A. 0 B. 4 C. 6 D. 3 E. 2</p>	
<p>QUESTION 15</p> <p>What is the output of line 3?</p> <p>A. 0 B. 4 C. 6 D. 3 E. 5</p>	
<p>QUESTION 16</p> <p>Given this code segment from method <code>main</code>:</p> <pre>Scanner kb = new Scanner(in); fun(kb);</pre> <p>what is the output if the input is:</p> <p>dog cat! run !</p> <p>A. !!catdog B. !catdog</p> <p>C. dogcat!run! D. !runcat!dog</p> <p>E. catdog</p>	<pre>public static void fun(Scanner kb) { String s = kb.next(); if (s.equals("!")) out.print(s); else { fun(kb); out.print(s); } }</pre>
<p>QUESTION 17</p> <p>What is the output?</p> <p>A. 2.3 B. 23.0 C. 2300.0</p> <p>D. 0.23 E. an Unchecked Exception is thrown</p>	<pre>out.println(Double.parseDouble("2.3e3"));</pre>
<p>QUESTION 18</p> <p>What is the output?</p> <p>A. fun 2 B. fun 1</p> <p>C. 0 D. 1 E. 2</p>	<pre>int x = 0; if(x++>0 && ++x>0 ++x>1) out.print("fun "); out.print(x);</pre>

<p>QUESTION 19</p> <p>What key word could replace <code>< ** ></code> so this code segment will compile?</p> <p>A. static B. protected C. public</p> <p>D. private E. final</p>	<pre>public static void main(String args[]) { < ** > String s = "POPEYE"; out.println(s); }</pre>															
<p>QUESTION 20</p> <p>What is the output?</p> <p>A. -1 B. -2 C. -3 D. -4 E. -5</p>	<pre>int[] x = {2, 15, 7, 33}; Arrays.sort(x); int c = Arrays.binarySearch(x, 17); out.println(c);</pre>															
<p>QUESTION 21</p> <p>What is the output?</p> <p>A. \$\$\$\$ B. a 3 c 9 C. \$ \$ \$ \$</p> <p>D. \$\$ \$\$ \$\$ \$\$ E. a\$3\$c\$9\$</p>	<pre>String s = "a 3 c 9"; out.println(s.replaceAll("\\w*", "\\\$"));</pre>															
<p>QUESTION 22</p> <p>Which statement replaces <code>< ** ></code> to call method <code>myst</code>?</p> <p>A. <code>myst((byte) 9)</code></p> <p>B. <code>myst(9)</code></p> <p>C. <code>myst(byte(9))</code></p> <p>D. <code>myst((String) 9)</code></p> <p>E. <code>myst(String(9))</code></p>	<p>Statement from the <code>main</code> method in the same class as <code>myst</code>:</p> <pre>out.println(< ** >);</pre> <p>-----</p> <pre>static String myst(byte x){ int mask = 1 << 7; StringBuffer sb = new StringBuffer(); for(int c=1; c<=8;c++){ sb.append((x & mask)==0?'0':'1'); x <<= 1; } return sb.toString(); }</pre>															
<p>QUESTION 23</p> <p>Assume Question 22 is correct. What is the output?</p> <p>A. 11110110 B. 00001001</p> <p>C. 00000111 D. 00001110 E. 11111001</p>																
<p>QUESTION 24</p> <p>Which statement is represented by the truth table to the right if <code>p</code>, <code>q</code> and <code>r</code> are boolean values?</p> <p>A. <code>r = !p && q</code> B. <code>r = !(p ^ q)</code></p> <p>C. <code>r = !(p && q)</code> D. <code>r = !(p q)</code></p> <p>E. <code>r = !p !q</code></p>	<table><tr><th>p</th><th>q</th><th>r</th></tr><tr><td>T</td><td>T</td><td>F</td></tr><tr><td>T</td><td>F</td><td>F</td></tr><tr><td>F</td><td>T</td><td>F</td></tr><tr><td>F</td><td>F</td><td>T</td></tr></table>	p	q	r	T	T	F	T	F	F	F	T	F	F	F	T
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F	F	T														
<p>QUESTION 25</p> <p>How many stars will be printed by the method call <code>rag(50)</code>?</p> <p>A. 2500 B. 100 C. 50 D. 25 E. 5</p>	<pre>public static void rag(int n) { for(int i = 1; i < n; i*=2) for(int j = 1; j < n; j*=2) if(i + j % 2 == 1) out.print("*"); }</pre>															
<p>QUESTION 26</p> <p>What is the running time of <code>rag</code>?</p> <p>A. $O(n)$ B. $O((\log_2 n)^2)$</p> <p>C. $O(n^2)$ D. $O(n \log_2 n)$ E. $O(\log_2 n)$</p>																

<p>QUESTION 27</p> <p>What is output by line 1?</p> <p>A. bx ax ay B. bx ax by C. ax bx by D. ax bx ay E. ax by ay</p>	<pre>class A{ public A(){} public void x(){ out.print("ax "); y(); } public void y() { out.print("ay "); } } ----- class B extends A{ public B() { super(); } public void x() { out.print("bx "); super.x(); } public void y() { out.print("by "); } public static void main(String[] args) throws IOException { A x = new B(); x.x(); // line 1 A y = new A(); y.x(); // line 2 } }</pre>
<p>QUESTION 28</p> <p>What is output by line 2?</p> <p>A. ax bx by B. ax bx C. ax ay D. ay ax ay E. ay ax</p>	<pre>class A{ public A(){} public void x(){ out.print("ax "); y(); } public void y() { out.print("ay "); } } ----- class B extends A{ public B() { super(); } public void x() { out.print("bx "); super.x(); } public void y() { out.print("by "); } public static void main(String[] args) throws IOException { A x = new B(); x.x(); // line 1 A y = new A(); y.x(); // line 2 } }</pre>
<p>QUESTION 29</p> <p>What is the largest value that could be output by this code segment?</p> <p>A. 1 B. 20 C. 21 D. 19 E. 18</p>	<pre>Random r = new Random(); for(int i = 1; i < 20; i++) out.println(r.nextInt(i));</pre>
<p>QUESTION 30</p> <p>What is the output if the input is 30?</p> <p>A. My dog B. dog fleas C. My fleas D. My has fleas E. My dog fleas</p>	<pre>Scanner kb = new Scanner(in); int x; try { x = Integer.parseInt(kb.next()); out.print("My "); } catch(Exception e) { out.print("dog "); } finally { out.print("has "); } out.print("fleas");</pre>
<p>QUESTION 31</p> <p>What is the output if the input is 2.5?</p> <p>A. My fleas B. dog fleas C. dog has fleas D. fleas E. has fleas</p>	<pre>Scanner kb = new Scanner(in); int x; try { x = Integer.parseInt(kb.next()); out.print("My "); } catch(Exception e) { out.print("dog "); } finally { out.print("has "); } out.print("fleas");</pre>
<p>QUESTION 32</p> <p>What is the output of line 1?</p> <p>A. yawbcdxz B. awxbyczd C. wabxcydz D. abcdwxyz E. awxbcdyz</p>	<pre>String c[] = {"a", "b", "c", "d"}; ArrayList<String> list = new ArrayList<String>(Arrays.asList(c)); list.add(1, "w"); list.add("x"); list.add(0, "y"); list.add("z"); for(String s : list) out.print(s); // line 1 out.println(list.remove("z")); // line 2</pre>
<p>QUESTION 33</p> <p>What is the output of line 2?</p> <p>A. false B. true C. 8 D. 7 E. z</p>	<pre>String c[] = {"a", "b", "c", "d"}; ArrayList<String> list = new ArrayList<String>(Arrays.asList(c)); list.add(1, "w"); list.add("x"); list.add(0, "y"); list.add("z"); for(String s : list) out.print(s); // line 1 out.println(list.remove("z")); // line 2</pre>

QUESTION 34

Which of the following are **TRUE** statements?

- I. the contents of a map can be viewed as a set of keys
- II. the contents of a map can be viewed as a set of values
- III. the contents of a map can be viewed as a set of key-value mappings

A. I only B. II only C. III only D. I and III only E. I, II and III

QUESTION 35

What is the output?

- A. true false false B. true true true
- C. false false true D. true false true
- E. false false false

```
Double t1 = new Double(1.5);
Double t2 = t1;
Double t3 = 1.5;
out.print((t1 == t2) + " ");
out.print((t1 == t3) + " ");
out.println(t1.equals(t3));
```

QUESTION 36

What is meant by the keyword `final` on line <*1>?

- A. Subclasses of B may not access members of B.
- B. Only one instance of class B may exist in a given program.
- C. After initialization, an object of class B cannot be changed.
- D. No class may be a subclass of either A or B.
- E. No class may be a subclass B only.

```
public class XXX {
    static int num = 0;
    class A {
        A() {
            num++;
            out.print("Red ");
        }
    }
    final class B extends A {           // <*1>
        B() {
            super();
            num++;
            out.print("Blue ");
        }
    }
    public void show() {
        A mA = new A();
        B mB = new B();
    }
    public static void main(String c[]) {
        XXX t=new XXX(), s=new XXX();
        t.show();                               // <*2>
        s.num *= 2;
        out.println(s.num);                     // <*3>
    }
}
```

QUESTION 37

What is output from line <*2>?

- A. Red Red
- B. Red Red Blue
- C. Red Blue Blue
- D. Blue Red Blue
- E. Red Blue Red

QUESTION 38

What is output from line <*3> after this code segment is executed?

- A. 6 B. 4 C. 10 D. 5 E. 8

Question 39

Using the declarations to the right, which of these statements would correctly assign the union of sets a and b to set c?

- A. `c = a.union(b);` B. `c.addAll(a, b)`
- C. `c.addAll(a);` D. `c = a;`
`c.addAll(b);` `c.add(b);`
- E. `c = a || b;`

```
Set a = new HashSet();
Set b = new HashSet();
Set c;

//elements added to a and b here
```

QUESTION 40

What is the output?

- A. 0x3403434 B. 0x3468
- C. 102 D. 114 E. 0x343434

```
out.println(0x34 + 034 + 34);
```