Note: Correct responses are based on Java, J2sdk v 6.0, 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 the product of 12_{13} and 102_7 ?

A. 3312_6 B. 233331_4 C. 1011101101_2 D. 1041_9 E. $3D9_{14}$

QUESTION 2

What is output by the code to the right?

A. 10   B. 6

C. 2   D. 3

E. 8

```
int a = 2;
int b = 3;
b = a + b * a;
out.println( b );
```

QUESTION 3

What is output by the code to the right?

A. 9.0   B. 10.0   C. 9.7   D. 7.1   E. 7.9

```
double c = 7.2;
c += 2.5;
out.println(c);
```

QUESTION 4

What is output by the code to the right?

A. CAT   B. C7AT#9

C. C7AT#9\n   D. c7AT#9

E. There is no output due to a runtime error.

```
String s = "C7at#9\n";
System.out.print( s.toUpperCase() );
```

QUESTION 5

What is output by the code to the right?

A. -6   B. -4   C. 4   D. 10   E. 2

```
int e = 01*14/3-10;
out.println(e);
```

QUESTION 6

What is output by the code to the right?

A. -1   B. 0

C. 5   D. 7

E. 10

```
String f = "rudolphandphriends";
int x = f.lastIndexOf("ph");
out.println( x );
```

QUESTION 7

What is output by the code to the right?

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

```
int cc = 2;
int g = 1;
System.out.print( cc % g + g % cc );
```

QUESTION 8

What is output by the code to the right?

A. 5   B. 6   C. 6.5   D. 6.25   E. 6.66

```
int i = 25;
i /= 4;
out.println(i);
```

QUESTION 9

What is output by the code to the right?

A. -1   B. 0   C. 8   D. -4   E. -2

```
int j = 11;
while( j > -2 )
  j -= 3;
out.println(j);
```

QUESTION 10	

What is output by the code to the right?
 	
 A. 7   B. 4
 	
 C. 14   D. 11
 	
 E. 8
	`int[] k = new int[3];`
	`int[] m = k;`
	`k[0] = 4;`
	`m[0] = 7;`
	`k = m;`
	`out.println(k[0] + m[0]);`

QUESTION 11	

What is the *last* value output by the code to the right ?
 	
 A. 3.14159   B. 3.0
 	
 C. 3.25   D. 2.75
 	
 E. There is no output due to a syntax error.
	`float p = .25f;`
	`for( ; p < Math.PI; p += 0.5 )`
	`{`
	`    out.println(p);`
	`}`

QUESTION 12	

What is output by the code to the right?
 	
 A. 0   B. 1
 	
 C. false   D. true
 	
 E. -1
	`boolean n = true;`
	`boolean o = true;`
	`out.println( !( n ^ o || n && o ));`

QUESTION 13	
What is output by the code to the right? A. 0 B. 1 C. null D. 0.0 E. There is no output due to a runtime exception.	`Double[] d = new Double[10];` `System.out.print( d[2].intValue() );`

QUESTION 14	
Which of the following could correctly replace `<*1>` in the code to the right ? A. Set B. Map C. List D. A and B only E. A, B, and C	`ArrayList< <*1> > aList;` `aList = new ArrayList< <*1>  >();`

QUESTION 15	

What replaces `<*1>` in the code to the right so method huh will return true if parameter x is at least 7 times as large as parameter y?
 	
 A. `return x * y > 7;`
 B. `return x > y * 7;`
 C. `return x >= y * 7;`
 D. `return y >= x / 7;`
 E. more than one of these
	`public boolean huh(double x, int y)`
	`{`
	`    <*1>`
	`}`

QUESTION 16	
What is output by the code to the right? A. 31 B. 19 C. 22 D. 12 E. 17	`out.println( 7 & 19 | 22 ^ 11 );`

QUESTION 17

What is output by the code to the right?

A. `false`

B. `true`

C. `0`

D. `1`

E. `-1`

```
Object ot = new Object();
Boolean bw = ot instanceof Comparable;
System.out.println( bw );
```

QUESTION 18

What is the output of `// line 1`?

A. `[12.5, 65.8, 16.6, 23.3, 3.6, 7.3]`

B. `[7.3, 3.6, 23.3, 16.6, 65.8, 12.5]`

C. `[16.6, 65.8, 12.5, 23.3, 3.6, 7.3]`

D. `[12.5, 3.6, 65.8, 16.6, 23.3, 7.3]`

E. `[23.3, 3.6, 7.3, 12.5, 65.8, 16.6]`

```
Stack<Double> who;
who = new Stack<Double>();

who.add(12.5);
who.push(65.8);
who.add(16.6);
who.push(23.3);
who.add(3.6);
who.push(7.3);

out.println(who);          // line 1

who.pop();
who.pop();
who.pop();
who.peek();

out.println(who.pop());    // line 2
```

QUESTION 19

What is the output of `// line 2`?

A. `65.8`

B. `16.6`

C. `7.3`

D. `3.6`

E. There is no output due to a syntax error.

QUESTION 20

Which of the following implements `List`?

A. `HashSet`   B. `TreeSet`   C. `Stack`   D. `Queue`   E. more than one of these

---

QUESTION 21

What is output by the code to the right?

A. `0`   B. `1`

C. `-1`   D. `3`

E. There is no output due to syntax error.

```
out.println("we".compareTo("web"));
```

QUESTION 22

What is output by the code to the right?

A. `12`   B. `18`

C. `14`   D. `32`

E. There is no output due to a runtime error.

```
Long xa = new Long("0x10");
Long ya = new Long("02");
out.println( xa + ya );
```

QUESTION 23

What correctly replaces **`<*1>`** in the code to the right so that all elements of `h` are inspected?

A. `h.hasNextInt()`   B. `h.hasNextDouble()`

C. `h.hasNext()`   D. A and B only

E. A, B, and C

QUESTION 24

Assuming **`<*1>`** was filled correctly, what is output by the code to the right?

A. `4.0`   B. `4.5`   C. `4.875`   D. `5.0`   E. `6.0`

```
String cs = "4.4+6.2-5.4+9.5";
Scanner h = new Scanner( cs );
h.useDelimiter("[+-.]");
double sx = 0;
int xn = 0;
while( <*1> )
{
    sx += h.nextInt();
    xn += 1;
}
out.println( sx / xn );
```

QUESTION 25

What is the output of `// line 1`?

A. `6`   B. `18`   C. `60`   D. `55`   E. `2`

QUESTION 26

What is the output of `// line 2`?

A. `6`   B. `18`   C. `60`   D. `55`   E. `2`

```
Queue<Integer> stuff;
stuff = new PriorityQueue<Integer>();
stuff.add(41);
stuff.add(55);
stuff.add(18);
stuff.add(6);
stuff.add(60);
stuff.add(23);
out.println(stuff.remove());// line 1
stuff.add(2);
out.println(stuff.remove());// line 2
```

QUESTION 27

What is the output of `// line 1`?

A. `nikoli`   B. `andrew`   C. `null`

D. `jason`   E. `thomas`

QUESTION 28

What is the output of `// line 2`?

A. `nikoli`   B. `andrew`   C. `null`

D. `jason`   E. `thomas`

QUESTION 29

What is the output of `// line 3`?

A. `3`   B. `4`   C. `5`   D. `6`   E. `7`

```
Map<Integer, String> map;
map = new TreeMap<Integer, String>();

map.put(7,"thomas");
map.put(3,"nikoli");
map.put(2,"andrew");
map.put(7,"luke");
map.put(3,"ben");
map.put(1,"alex");
map.put(6,"henry");
map.put(11,"brett");
map.put(7,"jason");
map.put(8,"collin");


out.println(map.get(2));   // line 1
out.println(map.get(7));   // line 2
out.println(map.size());   // line 3
```

QUESTION 30

What is output by the code to the right?

A. 0   B. 8

C. 4   D. 1

E. There is no output due to a syntax error.

```
public interface CooDoo {
  public static final int U = 4;
}

public class Sam implements CooDoo {
  public static final int U = 8;
}

// client code
System.out.print( CooDoo.U );
```

QUESTION 31

Which of the following methods is called when attempting to insert a new `Object` into a `TreeSet`?

A. `hashCode()`   B. `toSting()`

C. `equalTo()`   D. `compareTo()`

E. more than one of these

QUESTION 32

Which of the following could replace **<*1>** in the code to the right so that method `noob()` will execute n-1 times?

A. `n > 0`   B. `i <= n`

C. `i < n`   D. A and B only

E. A,B, and C

QUESTION 33

What information is method `noob()` collecting about parameter n?

A. all of the even numbers less than n

B. all of the odd numbers less than n

C. all of the factors of n

D. all of the digits of n

E. more than one of these

QUESTION 34

What is the runtime efficiency of `noob()`? Choose the most restrictive correct answer.

A. $O(\log_2 N)$ B. $O(N^2)$

C. $O(N)$ D. $O(N-1)$

E. $O(N^2)*O(\log_2 N)$

QUESTION 35

Assuming that **<*1>** was filled correctly, what is the output of the code at right?

A. `15`   B. `15 5 3 1`

C. `3 1`   D. `5 3 1`

E. `15 5 3`

```
public final class Whap
{

  public static String noob( long n )
  {
    String s = "";
    int i = 1;
    while( <*1> )
    {
       if(n % i == 0)
         s = i + " "+ s ;
       i++;
    }
    return s;
  }
}


/////////////////////////////////////////////
//client code
Whap ref = new Whap();
out.println( ref.noob(15) );     //line 1
```

QUESTION 36

What is output by the code to the right?

A. `4`   B. `32`

C. `16`   D. `8`

E. There is no output due to a syntax error.

```
System.out.print( 32 >>> 3 );
```

QUESTION 37

Which of the following could replace `<*1>` in the code to the right so that method `yo` would correctly throw an exception?

A. `throw new IllegalArgumentException()`

B. `throw IllegalArgumentException`

C. `throw new Exception(IllegalArgument)`

D. Either B or C

E. Any of these

For the remaining questions, assume `<*1>` has been filled in correctly.

QUESTION 38

What is the output?

A. `truetrue`   B. `truefalse`

C. `falsetrue`   D. `falsefalse`

E. `false`

QUESTION 39

What property is being tested by method `yo()` ?

A. The string contains an even number of 1s

B. The string ends in 1

C. The string contains an even number of 0s

D. The string contains more 1s and than 0s

E. The string ends in 0

QUESTION 40

Which of these could be used with the `yo()` method to test that a string contains two consecutive 1's, but not three or more consecutive 1's?

A. states:
```
    {{0,1},{0,2},{4,3},{3,3},{4,4}}
  ok:
    {false,false,true,false,true}
```

B. states:
```
    {{0,1},{0,2},{4,3},{3,3},{5,4},{6,4},{4,3}}
  ok:
    {false,false,true,false,true,false,true}
```

C. states:
```
    {{0,1},{0,2},{3,0},{3,3}}
  ok:
    {false,false,true,true}
```

D. states:
```
    {{0,1},{0,2},{4,3},{3,3},{4,5},{4,6},{4,3}}
  ok:
    {false,false,true,false,true,true,true}
```

E. more than one of these

```java
public static boolean yo(
                  String s,
                  int[][] states,
                  boolean[] ok)
{
  int i=0, state=0;
  while( i < s.length() )
  {
    if (s.charAt(i) == '0')
      state = states[state][0];
    else if (s.charAt(i) == '1')
      state = states[state][1];
    else
      <*1> ;

    ++i;
  }
  return ok[state];
}



/////////////////////////////////////
//client code
int states[][] = {{0,1},{0,1}};
boolean[] ok = {true, false};
out.print(yo("10110010",states,ok));
out.print(yo("11110101",states,ok));
```