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 sum of 10101_2 and 10101_2 ?

A. 222_4

B. 60_7

C. 33_{13}

D. 101010_2

E. more than one of these

QUESTION 2

What is output by the code to the right?

A. 31   B. 21   C. 27   D. 17   E. 22

```
int a = 0x1;
int b = 07;
int c = 3;
System.out.println(a + b * c);
```

QUESTION 3

What is output by the code to the right?

A. -7 14   B. 13 -8

C. -8 13   D. 13 8

E. 13 13

```
int d = 8;
int e = 5;
d += e;
e -= d;
System.out.println( d + " " + e );
```

QUESTION 4

What is output by the code to the right?

A. 38   B. 30   C. 32   D. 28   E. 42

```
int f = 0;
for(int j= 9; j>= -9; j--) {
   f += 2;
}
System.out.println( f );
```

QUESTION 5

What is output by the code to the right?

A. aplus

B. csr

C. csrocks

D. rocks

E. ocks

```
String str = "apluscsrocks";
String rts = "csr";
int x = str.indexOf( rts );
str = str.substring( x );
System.out.println( str );
```

QUESTION 6

What is output by the code to the right?

A. 7   B. 5   C. 0

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

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

```
byte[] ars = {3,6,9,2,4};
ars[0] = (byte)ars[0] + (byte)ars[4];
System.out.println( ars[0] );
```

QUESTION 7

How many combinations of values for the `boolean` variables `on`, `tw`, and `th` will result in `end` being set to `true`?

A. 1   B. 2   C. 3   D. 5   E. 6

```
boolean on, tw, th;
//code to initialize on, tw, and th

boolean end = on || tw ^ th;
```

QUESTION 8	

What is output by the code to the right?
 	
A. 8
 	
B. 80
 	
C. 138
 	
D. 830
 	
E. 0
	``java
	int th = 8;
	switch(th) {
	case 1:
	  System.out.print(1);
	case 3:
	  System.out.print(3); break;
	case 8:
	  System.out.print(8);
	default:
	  System.out.print(0); break;
	}
	``

QUESTION 9	

What is output by the code to the right?
 	
A. 12.0   B. 11   C. 11.0
 	
D. There is no output due to a syntax error.
 	
E. There is no output due to a runtime error.
	``java
	int num = 3;
	num *= 1.5;
	Double dum = num + 7.0;
	System.out.println(dum);
	``

QUESTION 10	

What is output by the client code to the right?
 	
A. word
 	
B. c
 	
C. meow
 	
D. The output would be a hashcode / memory address.
 	
E. There is no output due to a runtime error.
	``java
	public class Cat
	{
	  public String word;
	
	  public Cat(String w) {
	    word = w;
	  }
	  public String speak() {
	    return word;
	  }
	}
	
	//client code
	Cat c = new Cat("meow");
	System.out.println(c);
	``

QUESTION 11	

What is output by the code to the right ?
 	
A. 9   B. 9.0
 	
C. 8   D. 8.0
 	
E. There is no output due to a syntax error.
	``java
	int numy = (byte)Math.ceil(8.5);
	System.out.println(numy);
	``

QUESTION 12	

What is output by the code to the right ?
 	
A. 9.877   B. 9.88
 	
C. 9.87   D. 9.888
 	
E. There is no output due to a runtime error.
	``java
	System.out.printf("%.3f", 9.87654);
	``

QUESTION 13	

How many lines are output by the code to the right ?
 	
 A. `funny7`
 B. `funny76`
 C. `funny67`
 D. `funny13`
 E. `funny7+6`
	``java
	System.out.print("funny");
	System.out.print(7 + 6);
	``

QUESTION 14	

What is the output by the code to the right ?
 	
 A. `5`
 B. `4`
 C. `3`
 D. `8`
 E. `2`
	``java
	int[][] s = new int[][]{
	            {3, 6, 3},
	            {7, 8, 2},
	            {4, 3, 5}};
	
	System.out.println(s[2][2]);
	``

QUESTION 15	

What is the output by the code to the right ?
 	
 A. `1`   B. `2`   C. `4`   D. `7`   E. `15`
	``java
	int all = 0;
	for(int i=1; i<5; i*=2)
	  all += i;
	System.out.println(all);
	``

QUESTION 16	

What is the output by the code to the right ?
 	
 A. `1`   B. `7`   C. `8`   D. `9`   E. `0`
	``java
	String se = "abcdefg";
	System.out.println(se.length());
	``

QUESTION 17	

What is the output by the code to the right ?
 	
 A. `1`   B. `8`   C. `12`   D. `24`   E. `6`
	``java
	System.out.println(3 << 3 / 3);
	``

QUESTION 18	

What is the output by the code to the right ?
 	
 A. `true`
 B. `false`
 C. `TRUE`
 D. There is no output due to a syntax error.
 E. There is no output due to a runtime error.
	``java
	boolean b00 = new Boolean("TRUE");
	System.out.print("" + b00);
	``

QUESTION 19

What is the output by the code to the right ?

A. `024681012`

B. `0369121517`

C. `0481216`

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

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

```
ArrayList<Integer> list;
list = new ArrayList<Integer>();

for(int i=0; i<20; i+=2) {
  list.add(i);
}

for(int i=0; i<10; i+=2) {
  System.out.print(list.remove(i));
  list.add(0,i);
}
```

QUESTION 20

What is the output by the code to the right ?

A. `3.43 1.30`

B. `3.40 1.30`

C. `3.33 1.33`

D. `3.00 1.00`

E. `3.30 1.40`

```
double a1 = 10.3;
double b1 = 3.0;
System.out.printf("%.2f",a1 / b1);
System.out.print(" ");
System.out.printf("%.2f",a1 % b1);
```

QUESTION 21

What is the output by the code to the right ?

A. `[true, false, true, false, true, false]`

B. `[false, true, false, true, false, true]`

C. `[true, false, false, true, false, true]`

D. `[true, false, true, false, false, true]`

E. `[true, false, true, true, true, false]`

```
boolean[] br = new boolean[6];
for(int i=0; i<6; i+=2) {
    br[i] = !br[i];
}
out.print( Arrays.toString(br) );
```

QUESTION 22

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

A. `0`   B. `1`   C. `2`

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

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

QUESTION 23

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

A. `0`   B. `1`   C. `2`

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

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

```
public int m( Object a, Object b)
{
  if(a==b)
    return 0;
  if(a.equals(b))
    return 1;
  return 2;
}

////////////////////////////////
//client code
Object x = 900;
Object y = 900;
Object z = 901;
System.out.println(m(x,y));    //1
System.out.println(m(y,z));    //2
```

QUESTION 24

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

A. 0   B. 11   C. 9

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

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

QUESTION 25

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

A. 0 11   B. 11 9   C. 9 9

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

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

QUESTION 26

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

A. 3   B. 0 3   C. 3 3

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

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

```java
public class Box
{
  private int volume;

  public Box() {
    volume = 0;
  }
  public Box(int v) {
    volume = v;
  }
  public String toString() {
    return "" + volume;
  }
}


public class LunchBox extends Box
{
  private int volume;

  public LunchBox(int v) {
    volume = v;
  }

  public String toString() {
    return super.toString()
                  + " " + volume;
  }
}

//client code
Box a = new Box(9);
System.out.println(a);          //1


Box b = new LunchBox(11);
System.out.println(b);          //2

LunchBox c = new LunchBox(3);
System.out.println(c);          //3
```

QUESTION 27

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

A. [1, 2, 4, 3, 5, 9, 7, 11, 12, 13]

B. [1, 3, 2, 5, 4, 7, 9, 11, 12, 13]

C. [5, 4, 3, 2, 1, 7, 9, 11, 12, 13]

D. [1, 11, 3, 4, 7, 5, 9, 2, 12, 13]

E. [1, 2, 3, 4, 5, 7, 9, 11, 12, 13]

QUESTION 28

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

A. 3

B. 4

C. 7

D. 11

E. 12

```java
int[] ns = {1,2,4,7,3,5,9,11,12,13};
int cnt = 0;
boolean tog;
do {
  tog = false;
  for(int i=0; i<ns.length-1; i++) {
    if(ns[i]>ns[i+1]) {
      int t = ns[i];
      ns[i] = ns[i+1];
      ns[i+1] = t;
      tog = true;
      cnt++;
    }
  }
} while(tog == true);

String str = Arrays.toString(ns);
System.out.println(str);        //1
System.out.println(cnt);        //2
```

QUESTION 29

How many *'s are output when n is initialized to 10?

A. 45   B. 50

C. 55   D. 100

E. 40

QUESTION 30

How many *'s are output when n is positive?

A. n(n-1)/2   B. $n^2/2$

C. n(n+1)/2   D. n log n

E. log n

```java
int i=0;

int n;
// code to initialize n

while (++i < n)
{
  for (int j = n; j>i; --j)
    System.out.print('*');
}
```

QUESTION 31

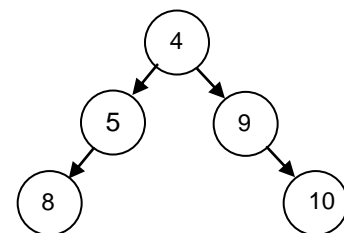What is the output by the code to the right.

A. 1   B. 0   C. 2

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

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

```java
Set<Double> s;
s = new TreeSet<Double>();
s.add( 9.4 );
s.add( 9.7 );
s.add( 9.4 );
s.add( 9.7 );
System.out.println( s.size() );
```

QUESTION 32

What type of data structure is the tree to the right ?

A. AVL Tree

B. Max Heap

C. Min Heap

D. Binary Search Tree

E. Stack

QUESTION 33

What is value of `a[2].length`?

A. 3   B. 4

C. 5   D. 15

E. None of these

QUESTION 34

How many times will the line marked **//1** be invoked?

A. 61   B. 65

C. 75   D. 70

E. 71

QUESTION 35

What is the output?

A. 4 6 0   B. 6 8 4

C. 6 10 6   D. 8 10 4

E. 8 10 6

```java
int m=5, n=3, p = 4;

int [][] a = new int[m][n];

for(int i=0; i<a.length; i++)
{
  for(int j=0; j<a[p].length; j++)
  {
    for(int k=p; k>=0; k--)
      a[i][j]= i+j+k+p;      //1
  }
}

out.println(a[2][2]+ " " +
        a[4][2] + " " + a[0][0]);
```

QUESTION 36

What is printed by the call: `g("funky",4);`

A. fu

B. funk

C. y

D. yknuf

E. funky

QUESTION 37

How many times will method g be invoked with the call:

        g("whodatsucka", 5);

A. 7

B. 5

C. 6

D. 8

E. None of these

```java
public static void g(String p, int i)
{
  if(i >= 0)
  {
    System.out.print(p.charAt(i));
    g(p,i-1);
  }
}
```

QUESTION 38

What is the output by the code to the right ?

A. 0

B. -32768

C. -1

D. 65535

E. 32767

```java
int bot = Character.MIN_VALUE;
int top = (char) bot - 1;
System.out.println( top );
```

QUESTION 39

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

A. ($0) ($0) ($0) ($0)

B. what in the world

C. (what) (in) (the) (world)

D. what( )in( )the( )world

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

```java
String str = "what in the world";
str = str.replaceAll("\\s+","($0)");
System.out.println(str);        //1
```

QUESTION 40

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

A. true

B. 0

C. false

D. 1

E. null

```java
String mat = "(\\(\\d+\\) )+";
boolean answer = str.matches(mat);
System.out.println(answer);     //2
```