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 13_8 plus 46_8 ?

A. 99_7 B. $3A_{13}$ C. $3C_{16}$ D. 300_4 E. 45_{12}

QUESTION 2

What is output by the code to the right?

A. 15 B. 16 C. 17 D. 10 E. 18

```
int num1 = 7;
int num2 = 9;
System.out.println(--num2 + num1);
```

QUESTION 3

What is output by the code to the right?

A. 9 B. 11 C. 10 D. 20 E. 0

```
int total = 0;
total += 2;
total -= 3;
total /= 2;
total *= 6;
System.out.println(total);
```

QUESTION 4

What is output by the code to the right?

A. 9 B. 10 C. 17 D. 11 E. 12

```
int sum = 0;
for(int i = 15; i > -5; i=i-2)
  sum++;
System.out.println(sum);
```

QUESTION 5

What is output by the code to the right?

A. 7 B. 1 C. -1

D. 5 E. 6

```
String thing = "pythoniscool";
Integer p = thing.indexOf(105);
System.out.println(p);
```

QUESTION 6

What is output by the code to the right?

A. 3 B. 5 C. 1 D. 2 E. 8

```
int[] ar = {1, 1, 2, 3, 5, 8, 13};
System.out.println(ar[ar[ar[3]]]);
```

QUESTION 7

What is output by the code to the right?

A. 0true B. 0false

C. true D. false

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

```
boolean b = true, c = false;
if( b | (c=true) )
   out.print(0);
out.println(c);
```

QUESTION 8

What is output by the code to the right?

A. 6 6

B. 6 7

C. 7 6

D. 7 7

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

```
int boss = 15, bass = 15;
boss /= 2;
boss /= 2;
boss *= 2;
bass *= 2;
bass /=2;
bass /= 2;
out.print(boss+" "+bass);
```

QUESTION 9

What is output by the code to the right?

A. -2.0 B. 5.0 C. 10.0 D. -3.0 E. 6.0

```
System.out.println(5 * 2 / 2.0 - 8);
```

QUESTION 10

What is output by the code to the right?

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

```
TreeMap<String, String> map;
map = new TreeMap<String, String>();
map.put("bob","jay");
map.put("jay","jay");
map.put("jay","bob");
out.println(map.size());
```

QUESTION 11

What is output by the code to the right?

A. 0
B. 1
C. 3
D. 4
E. 5

```
Scanner sc = new Scanner("5\nbob");
sc.nextInt();
String s = sc.nextLine();
out.println(s.length());
```

QUESTION 12

What is output by the code to the right?

A. ,,,78213
B. 0,078,213
C. 0078,213
D. 00078213
E. 78213

```
String format = "%0,8d";
int number = 78213;
System.out.printf(format,number);
```

QUESTION 13

What should replace **<*1>** in the code to the right so the client code compiles and runs without errors?

A. this
B. Grape
C. static
D. A and B only
E. A, B, and C

```
public class Grape
{
   static int[] arr = {1,4,3};
   int seeds = 0;

   public Grape(int n)
   {
      seeds = <*1>.arr[n];
   }
}

////////////////////////////////////
// client code
Grape bob = new Grape(2);
```

QUESTION 14

What is returned by `jojo(4)` ?

A. 6 B. 10 C. 12 D. 15 E. 16

```
public static int jojo(int n)
{
  int count = 0;
  for(int a = 0; a <= n; a++)
     for(int b = 0; b <= n; b++)
        for(int c=0; c <= n; c++)
        {
           if( a + b + c == n )
              count++;
        }

  return count;
}
```

QUESTION 15

What is returned by `jojo(100)`?

A. 5000

B. 5050

C. 5151

D. 5200

E. 5500

QUESTION 16

What is output by the code to the right?

A. 5

B. 6

C. 8

D. 10

E. There is no output due to infinite loop.

```
String s = "banannana";
int p = 0;
int count = 0;
while(p < s.length() &&
          s.indexOf("n", p) != -1) {
  count++;
  p = s.indexOf("n")+2;
}
System.out.println(count);
```

QUESTION 17

What is output by the code to the right?

A. 1 B. 49 C. 7 D. 77 E. 7777

```
System.out.println(7 * 7 / 7 * 7);
```

QUESTION 18

What is output by the code to the right?

A. 13 B. 12 C. 1 D. 2 E. 10

```
int b1 = 2;
if((b1 > 1 || b1++ > 1) && ++b1 > -1)
  b1 += 10;
System.out.println(b1);
```

QUESTION 19

What is output by the code to the right?

A. [doon, donah, donut]

B. [donut, doon]

C. [don, donut, donah, doon]

D. [don, donut, doon]

E. [donah, donut, doon]

```
ArrayList<String> lst;
lst = new ArrayList<String>();
lst.add("don");
lst.add("donah");
lst.set(0,"donut");
lst.add("doon");
Collections.sort(lst);
System.out.println(lst);
```

QUESTION 20

What is output by the code to the right?

A. true

B. false

C. y

D. funnystuff

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

```
String s = "funnystuff";
boolean b = s.matches(".*y.*");
System.out.println(b);
```

QUESTION 21

What is output by the code to the right?

A. 4

B. 2

C. 6

D. 1

E. 3

```
String key = "alligatorsrule";
String ans = "kittycatsdrool";
int score = 0;
int i = 0;
while(i < key.length()) {
  int con = 0;
  while(i < key.length() &&
      key.charAt(i)==ans.charAt(i++))
    con++;
  score += con * con;
}
System.out.println(score);
```

QUESTION 22

What is returned by the method call `xx("21", "21")`?

A. 4 B. -2 C. 0 D. true E. false

QUESTION 23

What is returned by the method call `xx(2.0f, 2.0)`?

A. 4 B. -2 C. 0 D. true E. false

```
public int xx(Object o1, Object o2){
  int ret = 1;
  if(o1==o2)
    ret += 3;
  else
    ret += -3;
  return ret;
}
```

QUESTION 24

Which of the following lines to the right will cause an exception to be thrown?

A. `//line 1`

B. `//line 2`

C. `//line 3`

D. `//line 4`

E. None of the lines at right will cause an exception.

```
public int go()
{
 String s = "huh-what-why-how";
 Integer pos = 0;
 try
 {
   pos = s.indexOf("-");      //line 1
   s = s.substring(pos-5);    //line 2
 }
 catch(RuntimeException e)
 {
   return pos++;              //line 3
 }
 catch(Exception e)
 {
   return pos++;
 }
 finally
 {
   pos+=2;
   return pos;                //line 4
 }
}
```

QUESTION 25

Which of the following is true when listed about potential exceptions in a try catch block?

A. The order of the exceptions is not important.

B. The least specific exceptions must be listed first.

C. The most specific exceptions must be listed first.

D. Only two types of exceptions can be listed.

E. More than one of these.

QUESTION 26

What is returned by a call to method `go()`?

A. 7

B. 5

C. 3

D. 1

E. 6

QUESTION 27

What type of sort is the code to the right ?

A. insertion sort
B. merge sort
C. quick sort
D. radix sort
E. selection sort

```
int[] stf = {3,4,7,1,5,2,10,-5,6};
for(int i = 0; i<stf.length-1; i++) {
  int min = i;
  for(int j=i+1; j<stf.length; j++) {
    if(stf[min]<stf[j])
      min = j;
  }
  int temp = stf[min];
  stf[min] = stf[i];
  stf[i] = temp;
}
System.out.println(
               Arrays.toString(stf));
```

QUESTION 28

What is output by the code to the right?

A. `[-5, 1, 2, 3, 4, 5, 6, 7, 10]`
B. `[6, 4, 7, 1, 5, 3, 2, 10, -5]`
C. `[10, 7, 6, 5, 4, 3, 2, 1, -5]`
D. There is no output due to a syntax error.
E. There is no output due to a runtime error.

QUESTION 29

What is returned by the method call `rec(4)`?

A. `128` B. `64`
C. `5` D. `16`
E. `6`

```
public static int rec(int n) {
  if(n <= 0)
    return 2;
  return rec(n/3) + rec(0);
}
```

QUESTION 30

What is returned by the method call `rec(2048)`?

A. `128` B. `64`
C. `5` D. `16`
E. `6`

QUESTION 31

What is output by the code to the right?

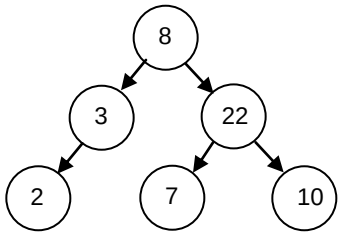
A. `[1, 2, 3, 7, 4, 5]`
B. `[1, 2, 3, 5, 4, 7]`
C. `[1, 2, 3, 4, 5, 7]`
D. `[3, 2, 1, 7, 4, 5]`
E. `[3, 2, 1, 5, 4, 7]`

```
int[] x = {1,2,3};
int[] y = {5,4,7};
ArrayList<Integer> a;
a = new ArrayList<Integer>();
ArrayList<Integer> b;
b = new ArrayList<Integer>();
for(int i:x)
  a.add(i);
for(int i:y)
  b.add(0, i);
Collections.reverse(a);
b.addAll(0, a);
System.out.println(b);
```

QUESTION 32

How many parents are in the tree to the right ?

A. `1` B. `2` C. `3` D. `4` E. `6`



QUESTION 33

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

A. `[65, 4, 11, 99]`

B. `[66, 5, 12, 100]`

C. `[65, 66, 4, 5, 11, 12, 99, 100]`

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

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

QUESTION 34

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

A. `1` B. `2` C. `5`

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

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

```
Queue<Integer> q;
q = new LinkedList<Integer>() {
  public boolean add(Integer i) {
    super.add(i);
    return super.add(i+1);
  }
};
q.add(65);
q.add(4);
q.add(11);
q.add(99);
System.out.println(q);              //1

PriorityQueue<Integer> pq;
pq = new PriorityQueue<Integer>(q);
pq.remove();
System.out.println(pq.remove());   //2
```

QUESTION 35

What is output by the code to the right?

A. `0`

B. `2`

C. `32`

D. `8`

E. `16`

```
int yuk = 1 << 7 >>> 3;
System.out.println(yuk);
```

QUESTION 36

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

A. `3`

B. `5`

C. `6`

D. `7`

E. `0`

QUESTION 37

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

A. `[, -, it, -, cat, -]`

B. `[45, it, 77, cat, 11]`

C. `[45, 77, 11]`

D. `[it, cat]`

E. `[45, -, it, cat, -, 11]`

```
String it = "?45?it?77?cat?11?????";
String[] si = it.split("\\?");
System.out.println(si.length);  //1

for(int i = 0; i < si.length; i++)
  if(si[i].matches("\\d+"))
    si[i] = "-";
List<String> li = Arrays.asList(si);
System.out.println(li);          //2
```

QUESTION 38

What is returned by `line 1` in the code to the right?

A. 0

B. 1

C. 2

D. 3

E. 4

QUESTION 39

What is returned by `line 2` in the code to the right?

A. 0

B. 1

C. 2

D. 3

E. 4

QUESTION 40

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

A. 45

B. 55

C. 70

D. 85

E. 65

```
class State
{
  private int y, x, d;
  public State(int y, int x, int d){
    this.y = y;
    this.x = x;
    this.d = d;
  }
  static int[] dx = {1,0,-1,0};
  static int[] dy = {0,1,0,-1};

  public static int solv(int sy,
                         int sx, int[][] f) {
    int n = f.length;
    LinkedList<State> q;
    q  = new LinkedList<State>();
    boolean[][] vis =
      new boolean[n][n];
    int diam = 0;
    q.add(new State(sy, sx, 0));
    while(q.size()>0){
      State c = q.removeFirst();
      int y = c.y, x = c.x, d = c.d;
      if(vis[y][x]) continue;
      vis[y][x] = true;
      diam = c.d;
      for(int j=0;j<4;j++){
        int ny = y + dy[j];
        int nx = x + dx[j];
        if(f[ny][nx] == 0){
          q.add(new State(ny, nx, d+1));
        }
      }
    }
    return diam;
  }
}

////////////////////////////////////
// client code
int[][] f = {{1,1,1,1,1,1},
             {1,0,0,0,0,1},
             {1,0,0,0,1,1},
             {1,0,0,1,1,1},
             {1,0,1,0,0,1},
             {1,1,1,1,1,1}};
int x = 0;
x = State.solv(4, 4, f);
System.out.println(x);       //line 1
x = State.solv(1, 1, f);
System.out.println(x);       //line 2
for(int i = 1; i < 5; i++) {
  for(int j = 1; j < 5; j++) {
    x += State.solv(i, j, f);
  }
}
System.out.println(x);       //line 3
```