1 What is the result when `printNumber(52)` is called?

```
public void printNumber (int n)
{
    if (n>=0)
    {
      printNumber (n-1);
      System.out.print (n);
    }
}
```

____

2 What value is returned when `mysterySum(5)` is called? __________

```
public int mysterySum (int n)
{
    if (n == 0)
      return 0;
    else
      return 3 + mysterySum(n - 1);
}
```

3 What is the output when `mysterySum2(5)` is called? __________

```
public int mysterySum2 (int a)
{
    if (a == 1)
      return 10;
    else
      return 10 + mysterySum2 (a – 1);
}
```

4 What is the output from `mystery(4321)`? __________

```
//precondition: x >=0
public void mystery (int x)
{
    System.out.print(x % 10);

    if ((x / 10) != 0)
    {
      mystery (x / 10);
    }
    System.out.print (x % 10);
}
```

5 What is returned as the result of `mystery(7)`? __________

```
public int mystery (int n)
{
    if (n == 0)
       return 1;
    else
       return 2 * mystery (n - 1);
}
```

6 The following method will return true, if and only if: __________

(A) s contains two or more of the same characters
(B) s contains two or more of the same characters in a row
(C) s starts with two or more of the same characters
(D) s ends with two or more of the same characters
(E) s.charAt(0) == s.charAt(1)

```
public boolean check (String s)
{
    return s.length ( )  >= 2 && (s.charAt(0) == s.charAt(1)
       || check(s.substring(1)));
}
```

7 What is returned by the `call mystery(0, 4, 5)` when __________
arr = {1, 2, 3, 5, 7}?

```
private int [ ] arr;
public int mystery (int low, int high, int num)
{
    int mid = (low+high) / 2;
    if (low > high)
    {
       return -1;
    }
    else if (arr[mid] < num)
    {
       return mystery (mid +1, high, num);
    }
    else if (arr[mid] > num)
    {
       return mystery (low, mid - 1, num);
    }
    else
       return mid;
}
```

8 What value is returned by the call `something(4,6)`? ___________

(A) 4
(B) 6
(C) 24
(D) 1296
(E) 4096

```
public int something (int a, int b)
{
    if (b <= 1)
    {
      return a;
    }
    else
    {
      return something (a, b-1);
    }
}
```

9 The procedure call `mystery(38)` will yield as output which of the following sequences of numbers? ___________

(A) 0 12
(B) 12 0
(C) 1 1 0 2
(D) 1 1 1 1
(E) 2 0 1 1

```
public void mystery (int n)
{
    if (n>2)
      mystery (n % 3);
    System.out.print( (n / 3) + ‟ ‟ );
}
```

10 Given the input line ABCD and 0, what does the following method print? ___________

(A) ABCDCBA
(B) ABBCCCDDDD
(C) ABBCCCDDDDDDDDCCCBBA
(D) AABABCABCDABCDABCABA
(E) ABBCCCDDDDDDDDCCCCBBBBAAAA

```
public void processLine(String str, int pos)
//precondition: str = "ABCD", pos=0
{
    if (pos < str.length)
    {
      int i;
      for (i=0; i<=pos; i++)
        System.out.print(str.substring(pos, pos+1) );
      processLine(str, pos + 1);
      for (i=0; i<=pos; i++)
        System.out.print( str.substring(pos, pos+1) );
    }
}
```

11 For each call to the following method, indicate what value is returned.

```
public int mystery1(int x, int y)
{
    if (x < y)
    {
      return x;
    }
    else
    {
      return mystery1(x - y, y);
    }
}
```

mystery1(6,13)____________

mystery1(8,2)_____________

mystery1(14,10) __________

12 For each call to the following method, indicate what console output is produced.

```
public void mystery2(int n)
{
    if (n <= 1)
    {
       System.out.print(n);
    }
    else
    {
       mystery2(n / 2);
       System.out.print(", " + n);
    }
}
```

mystery2(1) __________

mystery2(4) __________

mystery2(100) __________

13 For each call to the following method, indicate what value is returned.

```
public int mystery3(int n)
{
   if (n < 0)
   {
     return -mystery3(-n);
   }
   else if (n < 10)
   {
     return n;
   }
   else
   {
     return mystery3(n / 10 + n % 10);
   }
}
```

mystery3(6)________________

mystery3(17)__ mystery3(-

479) __________

14. For each call to the following method, indicate what value is returned.

```
public int mystery4(int n)
{
   if (n < 0)
   {
      return mystery4(-n);
   }
   else if (n < 10)
   {
      return n;
   }
   else
   {
      return n % 10 + mystery4(n / 10);
   }
}
```

```
mystery4(8)___  mystery4(-

52)_____    mystery4(3052)

_
```

15. Assume the array contains: { 2, 4, 6 } and that the call to the sum method is: `sum( arr, 3 ).` What value is returned? ________________

```
int sum( int arr[], int n )
{
   if ( n == 0 )
      return 0;
   else
  {
      int smallResult = sum( arr, n - 1 );
      return smallResult + arr[ n - 1 ];
  }
}
```

15 For each call to the following method, indicate what value is returned.

```
public int mystery5(int x, int y)
{
   if (x < 0)
   {
      return -mystery5(-x, y);
   }
   else if (y < 0)
   {
      return -mystery5(x, -y);
   }
   else if (x == 0 && y == 0)
   {
      return 0;
   }
   else
   {
      return 100*mystery5(x / 10, y / 10) + 10*(x % 10) + y % 10;
   }
}
```

mystery5(5,7)_____________

mystery5(12,9)____________

mystery5(-7,4) __________

17. For each call to the following method, indicate what value is returned.

```
public void mystery6(int x, int y)
{
   if (y == 1)
   {
      System.out.print(x);
   }
   else
   {
      System.out.print(x * y + ", ");
      mystery6(x, y - 1);
      System.out.print(", " + x * y);
   }
}
```

`mystery6(4,1)` ______________

`mystery6(8,2)` ______________

`mystery6(3,4)` __________

18. For each call to the following method, indicate what console output is produced.

```
public void mystery7(int n)
{
   if (n <= 0)
   {
      System.out.print("*");
   }
   else if (n % 2 == 0)
   {
      System.out.print("(");
      mystery7(n - 1);
      System.out.print(")");
   }
   else
   {
     System.out.print("[");
      mystery7(n - 1);
      System.out.print("]");
   }
}
```

`mystery7(0)` __________

`mystery7(1)` __________

`mystery7(5)` __________

19 For each call to the following method, indicate what console output is produced.

```
public void mystery8(int n)
{
   if (n > 100)
   {
      System.out.print(n);
   }
   else
   {
      mystery8(2 * n);
      System.out.print(", " + n);
   }
}
```

```
mystery8(113)______________

mystery8(70)_______________

mystery8(42)     __________
```

20 For each call to the following method, indicate what console output is produced.

```
public void mystery9(int x)
{
   if (x < 10)
   {
      System.out.print(x);
   }
   else
   {
      int y = x % 10;
      System.out.print(y);
      mystery9(x / 10);
      System.out.print(y);
   }
}
```

```
mystery9(7)________________

mystery9(38)_______________

mystery9(194)    __________
```

1 What is displayed when the following method is called with an ‘*’ __________

```
public static void splat (String s)
{
    if (s.length()<8)
       splat(s+s)
    System.out.println(s);
}
```

(A) `**`

(B) `****`

(C) `********`

(D)
```
********
**
```

(E)
```
********
****
**
*
```

2 Lexi is a cheerleader and a programmer. She has written the following recursive method that is supposed to generate the cheer “2 4 6 8 who do we appreciate!”: __________

```
public void cheer (int i)
{
    if (i != 8)                                         //line 1
    {                                                   //line 2
       i = i +2;                                        //line 3
       cheer(i);                                        //line 4
       System.out.print(i + “ ”);                       //line 5
    }                                                   //line 6
    else                                                //line 7
    {                                                   //line 8
       System.out.print (“who do we appreciate!”); //line 9
    }                                                   //line 10
}
```

However, Lexi’s method doesn’t work as expected when she calls `cheer(0)`. To get the right cheer, Lexi should

(A) replace `if (i !=8)` with `if (i<=8)` on line 1

(B) replace `if (i !=8)` with `if (i==8)` on line 1

(C) replace `if (i !=8)` with `while (i!=8)` on line 1

(D) swap line 4 and line 5

(E) move line 3 after line 5

23 Consider the following method: ____________

```
public String filter (String str, String pattern)
{
    int pos=str.indexOf(pattern);
    if (pos==-1)
       return str;
    else
       return filter (str.substring(0,pos) +
           str.substring(pos+pattern.length()), pattern);
}
```

What is the output of

```
    System.out.print(filter("papaya", "pa"));
```

(A) p
(B) pa
(C) ya
(D) aya
(E) paya

24 Consider the following method:

```
public void doMore (int n)
{
     if (n > 0)
     {
          doMore (n-1);
          System.out.print(n);
          doMore (n-1);
     }
}
```

What is the output following the call `doMore(3)`?

(A) 3211211
(B) 1121213
(C) 1213121
(D) 1211213
(E) 1123211

25. Given `int[]a = {1, 3, 4, 7, 9, 11, 13);`

What are the values in `a` after `disarray(a,7)` is called? The method `disarray` is defined as follows:

```
public void disarray(int[] a, int n)
{
  if(n > 1)
  {
     disarray(a, n - 1);
     a[n - 1] += a[n - 2];
  }
}
```

(A) 1, 4, 8, 15, 24, 35, 48
(B) 1, 4, 8, 12, 16, 20, 24
(C) 1, 24, 20, 16, 12, 8, 4
(D) None of the above

26. Consider the following recursive method: ___________

```
public void fun(int x)
{
     if (x >= 1)
     {
          System.out.print(x);
          fun(x-1);
     }
}
```

What is output by `fun(5)`?

27. Consider the following recursive method: ___________

```
public int tricky( int x, int y)
{
     if (y == 2)
          return x;
     else
          return tricky(x,y-1) + x;
}
```

What is output by `tricky(7,3)`?

28. Consider the following recursive method: ___________

```
public int mystery (int a, int b)
{
     if (a < b)
          return 5;
     else
          return b + mystery (a-1, b+1);
}

What does mystery (7,3) evaluate to?
```

29. Consider the following recursive method: ___________

```
public static void printString (String s)
{
     if (s.length()>0)
     {
          printString(s.substring(1));
          System.out.println(s.substring(0,1));
     }
}
```

What is the output as a result of the call `printString("stressed")`?

30. Consider the following recursive method: __________

```
public static void printStars (int k)
{
     if (k>0)
     {
          printStars(k-1);
          for (int j=1; j<=k; j++)
               System.out.print(“*”);
          System.out.println();
     }
}
```

What is the output as a result of the call `printStars(4)`?

(A)
```
****
***
**
*
```

(B)
```
*
**
***
****
```

(C)
```
***
**
*
```

(D)
```
*
**
***
```

(E)
```
*
*
*
*
```

31. Consider the following recursive method:

```
public int mystery (int k)
{
     if (k == 1)
          return 0;
     else
          return (1 + mystery (k/2);
}
```

What value is returned by the call `mystery(16)`?

(A) 0
(B) 2
(C) 4
(D) 5
(E) 16

32. Consider the following recursive method:

```
public static void printArray(String[]a, int k)
{
     if (k < a.length)
     {
          printArray (a, k+1);
          System.out.print(a[k]);
     }
}
```

Assume that array a has been initialized to be of length 4 and to contain the values “a”, “b”, “c”, and “d” (with “a” in a[0], “b” in a[1], and so on.) What is the output as a result of the call `printArray (a, 0)`?

(A) bcd
(B) dcb
(C) abcd
(D) dddd
(E) dcba

33. Questions 33 and 34 refer to the following recursive method:

```
public static int compute (int x, int y)
{
     if (x == y)
          return x;
     else
          return (compute(x+1, y-1));
}
```

What is returned by the call `compute(1,5)`?

(A) 1
(B) 2
(C) 3
(D) 4
(E) No value is returned because infinite recursion occurs.

34. Which of the following calls leads to an infinite recursion?

I. `compute(2,8)`
II. `compute (8,2)`
III. `compute (2,5)`

(A) I only
(B) II only
(C) III only
(D) I and II
(E) II and III

35. Consider the following recursive method. (Assume that method `readInt` reads one integer value typed in by the user.)

```
public static void print (int n)
{
     int x;
     if (n>0)
     {
          x=readInt();
          if (x>0)
          {
               print(n-1);
               System.out.println(x);
          }
          else
               print(n);
     }
}
```

What is the output of `print(5)`?

(A) The first five numbers typed by the user are printed in the order in which they are typed.

(B) The first five numbers typed by the user are printed in the opposite order to that in which they are typed.

(C) The first five positive numbers typed by the user are printed in the opposite order to that in which they are typed.

(D) The first five positive numbers typed by the user are printed in the order to that in which they are typed.

(E) Nothing is printed because the call causes an infinite recursion.

36. Consider the following method:

```
public void mystery (int a, int b)
{
   System.out.print (a + " ");
   if (a <= b)
      mystery (a  + 5, b -1);
}
```

What is the output when mystery (0, 16) is called?

(A) 0
(B) 0 5
(C) 0 5 10
(D) 0 5 10 15
(E) 0 5 10 15 20

37. What is the output when `smile(4)` is called?

```
public static void smile (int n)
{
   if (n==0)
      return;
   for (int k=1; k<=n; k++)
      System.out.print("smile!");
   smile(n-1);
}
```

(A) `smile!`
(B) `smile!smile!`
(C) `smile!smile!smile!`
(D) `smile!smile!smile!smile!`
(E) `smile!smile!smile!smile!smile!smile!smile!smile!smile!smile!`

38. When `smile(4)` is called, how many times will smile actually be called, including the initial call?

(A) 2
(B) 3
(C) 4
(D) 5
(E) 10

39. Consider the following method:

```
public int getSomething(int value)
{
   if(value < 2)
      return 0;
   else
      return 1 + getSomething(value - 2);
}
```

Assume `val` > 0. What is returned by the call `getSomething(val)`?

(A) `val - 2`
(B) `val % 2`
(C) `(val-1) % 2`
(D) `val / 2`
(E) `(val-1) / 2`

40. Consider the following method:

```
public int change(int value)
{
   if(value < 3)
      return value % 3;
   else
      return value % 3 + 10 * change(value/3);
}
```

What will be returned by the call `change(45)`?

(A) 0
(B) 21
(C) 150
(D) 500
(E) 1200

41. Consider the following method:

```
public void change(int value)
{
   if(value < 5)
      System.out.print("" + value % 5);
   else
   {
      System.out.print("" + value % 5);
      change(value/5);
   }
}
```

What will be printed as a result of the call `change(29)`?

(A) 1
(B) 4
(C) 14
(D) 104
(E) 401

42. Consider the following method:

```
public int getSomething(int value)
{
   if(value < 1)
      return 0;
   else
      return 1 + getSomething(value-1) + getSomething(value-2);
   }
```

What is returned by the call `getSomething(4)`?

(A) 0
(B) 1
(C) 2
(D) 5
(E) 7

43. Consider the following method:

```
public void doSomething(int value)
{
   if(0 < value && value < 10)
   {
      doSomething(value – 1);
      doSomething(value + 1);
      System.out.print(" " + value);
   }
}
```

Which of the following will be printed as a result of the call `doSomething(4)`?

(A) 4 3 2 1 5 6 7 8 9
(B) 4 3 5 2 6 1 7 8 9
(C) 9 8 7 6 5 1 2 3 4
(D) 9 8 7 1 6 2 5 3 4
(E) Nothing will be printed due to an infinite recursion

44. What is the output by the call `fun (3)`?

```
public void fun (int x)
{
   if (x>=1)
   {
      System.out.print(x);
      fun (x-1);
   }
}
```

(A) 3 2 1
(B) 1 2 3
(C) 2 3
(D) 3 2 10
(E) Nothing will be printed due to an infinite recursion

45. Consider the following data field and method:

```
private int[] list;

public int getIt(int index)
{
   if(index == list.length – 1)
      return list[index];
   else
   {
      int target = getIt(index + 1);
      if(target < list[index])
        return target;
      else
        return list[index];
   }
}
```

What will be returned by the call `getIt(0)`?

(A) The smallest value in `list`
(B) The index of the smallest value in `list`
(C) The largest value in `list`
. (D) The index of the largest value in`list`
(E) The index of the first occurrence of target in `list`

46. Consider the following data field and method:

```
private int[]list;

public int getIt(int index, int target)
{
      if(index >= list.length)
        return -1;
      else if(target == list[index])
        return index;
      else
        return getIt(index + 1, target);
}
```

What will be returned by the call `getIt(0, 5)`?

(A) The value at index 5 in `list`, or -1 if `list.length` < 5.
(B) The value at index `list.length-1` in `list`, or -1 if `list.length` < 5.
(C) The index of the first occurrence of 5 in `list`, or -1 if 5 does not occur in `list`.
(D) The index of the last occurrence of 5 in `list`, or -1 if 5 does not occur in `list`.
(E) The call will cause an `ArrayIndexOutOfBoundsException`.

47. Consider the following two methods that are declared within the same class:

```
public int supplement(int value)
{
   if(value < 50)
      return reduce(value + 10);
   else
      return value;
}

public int reduce(int value)
{
   if(value > 0)
      return supplement(value – 5);
   else
      return supplement(value);
}
```

What will be returned as a result of the call `supplement(40)`?

(A) 0
(B) -5
(C) 50
(D) 55
(E) Nothing will be returned due to an infinite recursion.

48. Consider the following two methods that are declared within the same class:

```
public int supplement(int value)
{
   if(value < 50)
      return reduce(value + 10);
   else
      return reduce(value);
}

public int reduce(int value)
{
   if(value > 0)
      return supplement(value – 5);
   else
      return value;
}
```

What will be returned as a result of the call `supplement(40)`?

(A) 0
(B) -5
(C) 50
(D) 55
(E) Nothing will be returned due to an infinite recursion.

49. What is the output by the call `fun (3)`?

```
public void fun (int x)
{
   if (x<1)
   {
      System.out.print(x);
   }
   else
   {
      System.out.print(x);
      fun (x-1);
   }
}
```

(A) 3 2 1 0 3 2 1 0
(B) 3 2 1 0
(C) 3 2 1 0 0 1 2 3
(D) 0 1 2 3
(E) Nothing will be printed due to infinite recursion

50. What is the output by the call `fun (3)`?

```
public int fun (int x)
{
   if (x<1)
     return x;
   else
     return x + fun(x-1);
}
```

(A) 3 2 1
(B) 1 2 3
(C) 6
(D) 5
(E) Nothing

51. What is the output by the call `fun (3,6)`?

```
public int fun (int x, int y)
{
   if (y==2)
     return x;
   else
     return fun (x, y-1) + x;
}
```

(A) 3 3 3 3 3
(B) 12
(C) 18
(D) 15
(E) 243

52. Consider the problem of determining the value of an investment (`amt`) that has a given interest rate (`rate`), compounded annually, after a given period of years (`yrs`). Each of the following methods correctly computes the value. You may assume all variables have been properly initialized.

```
public double method1 (double amt, int yrs, double rate)
{
    if (yrs >=1)
    for (int y=1; y<=yrs; y++)
        amt += rate*amt;
    return amt;
}

public double method2 (double amt, int yrs, double rate)
{
    if (yrs < 1)
      return amt;
    else
      return method2 (amt, yrs-1, rate) +
            method2 (amt, yrs-1, rate)*rate;
}

public double method3 (double amt, int yrs, double rate)
{
    amt = amt * Math.pow((1+rate), yrs);
}
```

For a large number of years, which statement below best characterizes the execution efficiency of the three code segments?

(A) Method 1 is more efficient than 2 or 3 because it is the most straightforward and understandable method.
(B) Method 2 is more efficient than 1 or 3 because recursion is always the most efficient solution.
(C) Method 3 is more efficient than 1 or 2 because it requires fewer operations.
(D) Methods 1 and 2 are more efficient than 3 because they do not call a method from another class.
(E) Methods 1, 2, and 3 execute equally efficiently.

53. Consider the following recursive method:

```
public static int seq (int x)
{
   if (x<=1 || x==3)
     return x;
   else
     return (seq(x-1) + seq(x-2));
}
```

What value will be printed by the call `seq(5)`?

(A) 1
(B) 3
(C) 4
(D) 7
(E) 11

54. A programmer has mistakenly typed a 2 instead of a 1 in the recursive call in the following search method. What will be the result of starting a search at position 0?

```
// postcondition:   returns first index of key within a at or
//                  after position start
//                  returns -1 if key is not present

public int research (Object [] a, Object key, int start)
{
     if (start == a.length)
     {
          return -1;
     }
     else if (a[start].equals(key))
     {
          return start;
     }
     else
     {
          return research(a, key, start+2);
          // should have been start+1;
     }
}
```

(A) The search will still work, but less efficiently than with the "+1."
(B) The correct value will be returned only when the key is found in an even numbered location.
(C) The correct value will be returned only when the length of the array is even.
(D) An `IndexOutOfBoundsException` will be thrown whenever length of array is odd.
(E) None of these explanations correctly describes when the code will work.

55. Consider the recursive method `minVal` that is intended to return the smallest value among the first `n` values in array a.

```
public static int minVal (int []a, n)
{
     if (n==1)
          return <missing code 1>;
     int min = minVal (a, n-1);
     if (min < a[n-1])
          return <missing code 2>;
     else
          return <missing code 3>;
}
```

Which of the following should be used to complete the three return statements?

	<missing code 1>	*<missing code 2>*	*<missing code 3>*
(A)	a[0]	min	a[n]
(B)	a[0]	a[n]	min
(C)	a[1]	a[min]	a[n-1]
(D)	a[1]	a[min]	a[min-1]
(E)	a[0]	min	a[n-1]

56. Consider the following method:

```
//precondition:  num>=0

public static void mystery (int num)
{
   if (num >1)
       mystery (num/2);
   System.out.print(num%2);
}
```

What is the best postcondition for `mystery`?

(A) Reverses the digits of `num`
(B) Prints the remainder when `num` is divided by 2
(C) Prints one-half `num`
(D) Prints the square root of `num.`
(E) Prints the binary representation of `num.`

57. Which of the following statements about recursive algorithms are true?

I. Recursive algorithms must feature a number as one of their inputs
II. Recursion is best used when there is an identifiable general case and an identifiable simplest case.
III. Some algorithms, such as binary search, require the use of recursion.

(A) I only
(B) II only
(C) III only
(D) Exactly two of the statements are true.
(E) All three of the statements are true.

58. Consider the following method:

```
public void mysteryMix (String str)
{
   int len = str.length();
   if (len >=3)
   {
     mysteryMix (str.substring(0,len/3));
     System.out.print (str.substring(len/3, 2*len/3));
     mysteryMix (str.substring(2*len/3));
   }
}
```

What is the output when `mysteryMix (“la-la-la!”)` is called?

(A) `la-la-la!`
(B) `ala-a`
(C) `ala-la-la-l`
(D) `lla-l`
(E) `a-la-a!`

59. Consider the following method:

```
public void mystery (int n)
{
   int i;
   if (n <= 0)
      return;
   for (i=0; i < n; i++)
   {
      System.out.print("-");
   }
   for (i=0; i < n; i++)
   {
      System.out.print("+");
   }
   System.out.print();
   mystery(n-1);                   //recursive call
}
```

What is the output when `mystery (4)` is called?

(A)
```
----++++
```

(B)
```
----++++
----++++
----++++
----++++
```

(C)
```
----+
----++
----+++
----++++
```

(D)
```
-+
--++
---+++
----++++
```

(E)
```
----++++
---+++
--++
-+
```

60. Consider the following method:

```
public void mystery (int n)
{
   int i;
   if (n <= 0)
      return;
   mystery(n-1);                    //recursive call

   for (i=0; i < n; i++)
   {
     System.out.print(“-”);
   }
   for (i=0; i < n; i++)
   {
     System.out.print(“+”);
   }
   System.out.print();
}
```

What is the output when `mystery (4)` is called?

(A)
```
----++++
```

(B)
```
----++++
----++++
----++++
----++++
```

(C)
```
----+
----++
----+++
----++++
```

(D)
```
-+
--++
---+++
----++++
```

(E)
```
----++++
---+++
--++
-+
```

61. What is the result when `whatsIt(6,2)` is called? ___________

```
public void whatsIt (int p, int pap)
{
    if (p/q == 0)
       System.out.println(p+q+1);
    else
    {
       System.out.println(p);
       whatsIt(p/q, q);
}
```

62. What is the action of the method `mystery5` ? ___________

```
public int mystery5(int a, int b)
{
    if (a == 1)
     return b;
    else
     return b * mystery5(a-1,b);
}
```

(A) a + b

(B) a * b

(C) a^b

(D) b^a

(E) a! (a factorial)

63. What value is printed by `System.out.println(rig(4));` ___________

```
public static int rig(int n)
{
    if ( (n = = 0) )
    {
       return 5;
    }
    else if ( n = = 1)
    {
       return 8;
    }
    else
    {
       return rig(n – 1) - rig(n – 2);
    }
}
```

64. What is returned by the call `stutter(-348)`? __________

```
public int stutter(int n)
{
     if (n < 0)
        return -stutter(-n);
     else if (n < 10)
        return n * 11;
     else
        return 100 * stutter(n / 10) + stutter(n % 10);
}
```

65. What is printed by `writeBinary(-39)`? __________

```
public void writeBinary(int n)
{
     if (n < 0)
     {
        System.out.print("-");
        writeBinary(-n);
     }
     else if (n < 2)
        System.out.print(n);
     else
     {
        writeBinary(n/2);
        System.out.print(n % 2);
     }
}
```