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 result of 12_8 times 11_2 ?

A. $1E_{16}$ B. 31_{10} C. 37_8 D. 27_{12} E. 11111_2

QUESTION 2

What is output by the code to the right?

A. 1.5 B. 3 C. 1.0 D. 4 E. 1

```
int x = 4;
int y = 3;
System.out.println( x / y + y / x );
```

QUESTION 3

What is output by the code to the right?

A. 3 B. 13 C. 117 D. 1 E. 12

```
String s = "Fuzzy Wuzzy Wuz A Bear";
System.out.println(s.lastIndexOf(117));
```

QUESTION 4

What is output by the code to the right?

A. 24 B. 15 C. 12 D. 29 E. 60

```
int sum = 5;
for(int i = 0; i <= 15; i+=3){
   sum += 4;
}
System.out.println( sum );
```

QUESTION 5

What is output by the code to the right?

A. 2 B. 3 C. 6 D. 63 E. 32

```
int x = 632;
int y = 10;
System.out.println( x / y % y );
```

QUESTION 6

What is output by the code to the right?

A. 1 B. 2 C. 3 D. 4 E. 5

```
int[] num = {1, 2, 3, 4, 5, 6};
num[1] = num[1] * num[3];
num[1] = num[1] / num[4];
System.out.println( num[1] );
```

QUESTION 7

Which answer is logically equivalent to the following `boolean` expression, where `p` and `q` are `boolean` variables?

```
!p || !q
```

A. `p && q` B. `!p && !q` C. `!(p || q)` D. `p || q` E. `!(p && q)`

QUESTION 8

What is output by the code to the right?

A. 1 B. 2 C. 12 D. 21

E. no output due to a syntax error

```
double x = -3.1;
float y = -5.9f;
if( x < y )
System.out.print( 1 );
if( y > -6 )
System.out.print( 2 );
```

QUESTION 9

How many lines of output does the code to the right produce?

A. 1 B. 2 C. 3 D. 4 E. 5

```
System.out.printf("Answer %d ",2);
System.out.print("\nis incorrect\n");
System.out.print("\tin most cases.\\");
```

QUESTION 10

What is output by the code to the right?

A. `7 7`
B. `7 14`
C. `14 14`
D. `0 0`
E. `0 14`

```
int x = 7;
int y = 14;
x = Math.max(x, y);
y = Math.min(x, y);
System.out.println( x + " " + y );
```

QUESTION 11

What replaces **<*1>** in the code to the right to indicate that the method `getScore` returns the `hiScore` ?

A. `return`
B. `int`
C. `static`
D. `private`
E. `void`

Assume **<*1>** is filled in correctly.

QUESTION 12

Which of the following creates a `Game` object whose `numPlayer` instance variable is initialized to zero?

A. `Game g = new Game("0");`
B. `Game g = new Game('0');`
C. `Game g = new Game(0.0);`
D. `Game g = new Game();`
E. more than one of these

QUESTION 13

Which of the following prints out the instance variable `hiScore` ?

A. `System.out.println(getScore());`
B. `System.out.println(hiScore);`
C. `System.out.println(g.setScore());`
D. `System.out.println(g.hiScore);`
E. `System.out.println(g.getScore());`

```
public class Game
{
  private int numPlayer;
  private int hiScore;

  public Game(){
     numPlayer = 0;
     hiScore = 0;
  }

  public Game(int num){
     numPlayer = num;
  }

  public void setScore(int scr){
     hiScore = scr;
  }

  public <*1>  getScore(){
     return hiScore;
  }
}
```

QUESTION 14

What is returned by the method call `rec(7)`?

A. `1.5`
B. `0.5`
C. `1`
D. There is no output due to a syntax error.
E. There is no output due to a runtime error.

```
public static int rec(int x){
   x %= 2;
   return x + 0.5;
}
```

QUESTION 15

What is output by the code to the right?

A. `xx19` B. `x19` C. `76` D. `19` E. `134d`

```
System.out.printf("%x4d", 19);
```

QUESTION 16

What is output by the code to the right?

A. `false` B. `true` C. `0`

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

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

```
String item = "Austin Texas";
boolean m = item.matches("A.*.*.s");
System.out.print( m );
```

QUESTION 17

What is returned by the method call `rec(6)`?

A. `21`

B. `15`

C. `34`

D. `22`

E. `20`

```
public static int rec(int a){
if(a < 1)
return 1;
else
return rec(a - 1) + rec(a - 2);
}
```

QUESTION 18

Which of the following could replace **<*1>** in the code to the right as a syntactically legal identifier?

A. `List` B. `ArrayList`

C. `Object` D. `Map`

E. More than one of these.

Assume **<*1>** is filled in correctly.

QUESTION 19

What is output by the code to the right?

A. `[5, 2, 0, 3]` B. `[5, 0, 4, 2]`

C. `[3, 5, 4, 1]` D. `[3, 0, 1, 4]`

E. `[3, 5, 1, 4]`

```
<*1> <Integer> num;
num = new ArrayList<Integer>();
num.add(5);
num.add(0);
num.remove(0);
num.add(0, 3);
num.add(4);
num.add(2, 1);
System.out.print( num );
```

QUESTION 20

What is output by the code to the right?

A. `6` B. `7` C. `8`

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

E. There is no output due to an `ArrayIndexOutOfBoundsException`.

```
String n = "all rain in Spain falls";
String[] ch =n.split("[aeiou]+");
System.out.print( ch.length );
```

QUESTION 21

What type of data structure does the code to the right emulate?

A. Set
B. Stack
C. Queue
D. Heap
E. Binary Search Tree

```
LinkedList<Character> t;
t = new LinkedList<Character>();
for(char i = 'E'; i > 'A'; i--)
   t.add( i );
for(Character s: t)
   System.out.print( s );
```

QUESTION 22

What is output by the code to the right?

A. `BCDE`
B. `EDCB`
C. `ABCD`
D. `DCBA`
E. `EADBC`

QUESTION 23

What is output by the code to the right?

A. `12`
B. `123`
C. `321`
D. `32`
E. `1`

```
Stack<Integer> s;
s = new Stack<Integer>();
s.push( 1 );
s.push( 2 );
s.push( 3 );
do{
   System.out.print( s.pop() );
}while(!s.empty() && s.peek() % 2==0);
```

QUESTION 24

What is output by the code to the right?

A. `110101`
B. `35`
C. `110110`
D. `65`
E. `065`

```
int a=064+1;
System.out.print(
Integer.toBinaryString( a ) );
```

QUESTION 25

What is output by the code to the right?

A. `abc`
B. `a`
C. `bc`
D. `c`
E. `cde`

```
char[] a = {'a', 'b', 'c', 'd', 'e'};
String b;
b = new String( a, 2, 3 );
System.out.print( b );
```

QUESTION 26

What is output by the code to the right?

A. `198`
B. `false`
C. `1`
D. `true`
E. `0`

```
char w = 'a';
String x = "100";
int y = Integer.parseInt( x, 2 );
System.out.print( w+2 == y );
```

QUESTION 27

What is output by the code to the right?

A. `AB34`
B. `abcd`
C. `1234`
D. `34`
E. `CD`

```
char[] txt = {'a','b','c','d'};
for( char s : txt ){
s -= Character.valueOf(s)>98 ? 48 : 32;
System.out.print( s );
}
```

QUESTION 28

Which of the following could replace **`<*1>`** in the code to the right as a syntactically legal identifier?

A. `Queue`
B. `List`
C. `LinkedList`
D. `ArrayList`
E. `More than one of these`

Assume **`<*1>`** is filled in correctly.

```
Queue a = new <*1> ();
a.add("A");
a.add("A");
a.add("B");
a.add("C");
a.remove(0);
System.out.println (a);
```

QUESTION 29

What is output by the code to the right?

A. `false`
B. `true`
C. `[B, C]`
D. `[A, B, C]`
E. `[A, A, B, C]`

QUESTION 30

What is output by the code to the right?

A. `true false`
B. `true true`
C. `false false`
D. `false true`
E. There is no output due to a syntax error.

```
Double[] t = {1.5, 2.3, 3.7};
Double[] s = t;
s[2] = 2.0;
out.print((s[2] == t[2]) + " ");
s = new Double[3];
out.print((s == t) + " ");
out.println();
```

QUESTION 31

What is output by the code to the right?

A. `311`
B. `310`
C. `U`
D. `I`
E. `L`

```
TreeMap f = new TreeMap();
f.put("U", 312);
f.put("I", 311);
f.put("L", 310);
Iterator< Map.Entry > i;
i = f.entrySet().iterator();
i.next().getValue();
System.out.print(i.next().getValue());
```

QUESTION 32

What is output by the following client code?

```
Car c = new Car();
System.out.print( c.whl() + "_" + c.pwr() );
```

A. `4_motor` B. `motor_4`
C. `4` D. `4_4`
E. There is no output due to a syntax error in the client code.

QUESTION 33

What is output by the following client code?

```
Trans b = new Boat();
System.out.print( b.pwr() + "_" + b.whl() );
```

A. `sails_0` B. `_sails` C. `0_sails`
D. The output cannot be determined.
E. There is no output due to a syntax error in the client code.

QUESTION 34

Which of the following could replace **<*1>** in the code to the right to make class `Tank` valid?

A. Nothing is needed

B.
```
public String whl(){
    return "0";
}
```

C.
```
public String pwr(){
    return "motor";
}
```

D.
```
public abstract String whl(){
    return "4";
}
```

E.
```
public abstract String pwr(){
    return "motor";
}
```

```
public abstract class Trans{
  public abstract String whl();
  public String pwr(){
     return "motor";
  }
}

public class Boat extends Trans{
  public String whl(){
     return "0";
  }
  public String pwr(){
     return "sails";
  }
}

public class Car extends Trans{
  public String whl(){
     return "4";
  }
}

public class Tank extends Trans{
  <*1>
}
```

QUESTION 35

What is output by the code to the right?

A. `98.2` B. `c`
C. `63.2` D. `a`
E. `There is no output due to a syntax error.`

```
int a = Integer.parseInt("46",7);
double b = Double.parseDouble("13.2");
char c = '4';
out.println( (char) (a + b + c) );
```

QUESTION 36

What does method `s` return?

I. The index of the first occurrence of `f` in `data`
II. The index of the last occurrence of `f` in `data`
III. `-1` if `f` is not in `list`.

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

```
public int s(int[] data, int f){
  int t = data.length;
  for(int i = 0; i < t; i++)
    if( data[i] == f )
      return i;
  return -1;
}
```

QUESTION 37

What replaces **<*1>** in the code to the right to swap the elements at positions `j` and `i` **?**

A.
```
Comparable hold = data[j];
data[j]=data[i];
data[j]=hold;
```

B.
```
Object hold = data[j];
data[j]=data[i];
data[j]=hold;
```

C.
```
data[j] = data[j+1];
data[j+1] = data[j];
```

D.
```
Comparable hold = data[j];
data[j]=data[i];
data[i]=hold;
```

E.
```
int hold = data[j];
data[j]=data[i];
data[i]=hold;
```

```
public void sum( Comparable[] data )
{
  int l1 = data.length;
  for (int i = 0; i<l1; i++)
  {
   for (int j = 0; j<l1; j++)
   {
    if(data[j].compareTo(data[i])<0)
    {
     <*1>
    }
   }
  }
}
```

QUESTION 38

Which of the following best describes what the method `sum` does to the elements of `data` if **<*1>** is replaced with choice `A` in question 37?

A. It sorts the elements in ascending order

B. It sorts the elements in decending order

C. It puts the maximum value in the middle

D. It does nothing

E. It randomizes the elements

QUESTION 39

The following values are inserted in the order shown into a binary search tree using the traditional insertion algorithm. What is the result of a pre order traversal of the resulting tree?

`6, 9, 3, 8, 4, 10, 1`

A. `6 3 1 4 9 8 10`

B. `10 9 8 6 4 3 1`

C. `1 3 4 6 8 9 10`

D. `1 9 4 6 8 3 10`

E. `1 4 3 8 10 9 6`

QUESTION 40

Which section of a try catch block will always be executed regardless whether an error occurs in the try block?

A. try B. throws C. catch D. throw E. finally