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 111010_2 minus 100001_2 ?

A. 10001_2 B. 17_{10} C. 110001_2 D. $A9_{16}$ E. 25_{10}

QUESTION 2

What is output by the code to the right?

A. 44   B. 424   C. 46   D. 8   E. 4.75

```
int a = 42;
a = 27 / 4 - 2;
out.println(a+a);
```

QUESTION 3

What is output by the code to the right?

A. 5.5   B. 5   C. 22   D. 2   E. 22.2

```
int x = 22;
x %= 4;
out.println(x);
```

QUESTION 4

What line of code effectively sums up the first 5 integer numbers?

```
I.    int count=0;
      for(int i=1; i<=5; i++)
          count+=i;
      out.println(count);

II.   int count=0;
      int i=5;
      while(i>0)
          count+=i--;
      out.println(count);

III.  int count = 0;
      for(int i=1; i<5; i++)
          count=count+i;
      out.println(count);
```

A. II only   B. II & III   C. I & III   D. I only   E. I & II

QUESTION 5

What is output by the code to the right?

A. s   B. T   C. -1   D. a space

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

```
String title = "The Usual Suspects";
title.substring(title.indexOf("o"));
out.println(title);
```

QUESTION 6

What is output by the code to the right?

A. 23   B. 2   C. 3   D. 40   E. 19

```
int b[] = {3,40,23,2,19,20};
out.println(b[b[3]]);
```

QUESTION 7

When is the variable `c` true?

A. when b is true

B. it is never true

C. when a and b is both true

D. when a is the opposite of b

E. when a is true

```
c = a && (b || !a)
```

QUESTION 8

What is output by the code to the right?

A. 40   B. 31

C. 42   D. 33

E. 11

```
int x = 9;
if (x < 10)
   x += 31;
if (x > 33)
   x += 2;
out.println(x);
```

QUESTION 9

What is NOT a possible output?

A. 0   B. 17

C. 15   D. 8

E. 3

```
out.print( x % 17 );
```

QUESTION 10

Which of the following correctly uses the class to the right?

A. `Movie film = new Rating("PG-13");`

B. `Movie film = Movie(13);`

C. `film.getRating()="PG";`

D. `film.getRating("R");`

E. `Movie film = new Movie();`

```
public class Movie
{
  private String rating;

  public Movie(String r)
  {
     rating = r;
  }

  public Movie()
  {
     rating = "UR";
  }

  public String getRating()
  {
     return rating;
  }
}
```

QUESTION 11

Which piece of code best simulates the roll of a 20 sided die?

A. `(int)(Math.random()+20)`

B. `(int)(Math.random()*20+1)`

C. `(int)(Math.random(20)+1)`

D. `(int)(Math.random()*20)`

E. `(int)(Math.random(20))`

QUESTION 12	
What is output by the code to the right? A. `sslinafspmahcsvam` B. `sspmahcslinafssvam` C. `%sslinaf%s,spmahc,svam` D. `spmahcslinafsvam` E. There is no error due to a syntax error.	```out.printf("%sslinaf%s", "spmahc","svam");```

QUESTION 13	
What is output by the code to the right? A. `10-7365NOIR2748` B. `2NOIR2748` C. `-6365NOIR75` D. `2NOIR75` E. There is no error due to a syntax error.	```out.println(10-73+65+"NOIR"+27+48);```

QUESTION 14	
What is output by the code to the right? A. `2` B. `0` C. `8` D. `6` E. `4`	```int x[][] = new int[3][4];for(int i=0; i<3; i++) for(int j=0; j<3; j++) x[i][j] = i*j+1;out.println(x[2][3]);```

QUESTION 15	
What is output by the code to the right? A. `216` B. `441` C. `141` D. `175` E. `250`	```int sum = 0;for(int i=16; i<34; i+=3) sum+=i;out.println(sum);```

QUESTION 16	
What is the best code to get the last initial from a person's name? A. `char initial = name.substring(name.indexOf(" "),name.indexOf(" ")+1;` B. `char initial = name.charAt(name.indexOf(" ")+1);` C. `char initial = name.charAt(name.indexOf(" "));` D. `char initial = name.charAt(name.lastIndexOf(" ")+1);` E. `char initial = name.charAt(name.lastIndexOf(" "));`	

QUESTION 17	
What is output by the code to the right? A. `68` B. `0` C. `69` D. `1000100` E. `253`	```out.println(253 & 70);```

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QUESTION 18

When would r be true?

A. a = false; t = false; y = true;

B. a = true;

C. a = false; t = true; y = true;

D. a = true; t = false; y = false;

E. r can never be true

```
boolean r,a,t,y;

r = !a && (!t || !y && t);
```

QUESTION 19

What is output by the code to the right?

A. [18, 81, 28, 50, 97]

B. [81, 28, 1, 18, 97, 2, 50]

C. [18, 50, 97]

D. [1, 2, 18, 28, 50, 81, 97]

E. [81, 18, 50, 28, 97]

```
ArrayList<Integer> list;
list = new ArrayList<Integer>();
list.add(81);
list.add(28);
list.add(1,18);
list.add(97);
list.add(2,50);
out.println(list);
```

QUESTION 20

What is output by the code to the right?

A. 2   B. 1

C. 0   D. 3

E. 5

```
int a = 126;
int b = a / 3;
out.println( a % 4 );
```

QUESTION 21

What is output by the code to the right?

A. 70   B. 71

C. 72   D. 73

E. 69

```
int x = 13;
while(x < 71)
  x+=4;
System.out.println(x);
```

QUESTION 22

Which of the following correctly replaces **<*1>** in the code to the right such that a batting average is accurately calculated?

A. double avg = (double)hits/atBats;

B. int avg = hits/atBats;

C. double avg = double(hits/atBats);

D. double avg = hits/atBats;

E. more than one of these

```
public String batAvg(int hits,
                     int atBats)
{
  <*1>
  if (avg > .300)
    return "Superstar";
  if (avg > .250)
    return "Journeyman";
  if (avg > .125)
    return "Liability";
  return "Sears";
}
```

QUESTION 23

Assume **<*1>** is filled in correctly, what is returned by the method call batAvg(112,413)?

A. Superstar   B. Journeyman

C. Sears   D. Liability

E. There is no output due to runtime error.

QUESTION 24

Which of the following correctly replaces `<*1>` in the code to the right such that the Martian lung capacity is 5 times the size of `Man`'s lung capacity?

A. `return Man.getBreath()*5;`

B. `return getBreath()*5;`

C. `return super.getBreath()*5;`

D. `return lung*5;`

E. `return super.lung*5;`

QUESTION 25

Assuming **`<*1>`** is replaced correctly, what is output by line `<*2>` in the code on the right?

A. `Martian 265`

B. `Martian Man 265`

C. `Man Martian 265`

D. `Man 265`

E. `Man Martian 53`

QUESTION 26

Assuming **`<*1>`** is replaced correctly, what is output by line `<*3>` in the code on the right?

A. `Man 110`

B. `Martian 110`

C. `Man Martian 110`

D. `Martian Man 110`

E. `Man 22`

```java
public class Man
{
   private int lung;
   private String type;

   public Man(int v)
   {
      lung = v;
      type = "Man";
   }

   public int getBreath()
   {
      return lung;
   }

   public String toString()
   {
      return type + " " + getBreath();
   }
}

class Martian extends Man
{
   private String type;

   public Martian(int v)
   {
      super(v);
      type = "Martian";
   }

   public int getBreath()
   {
      <*1>
   }
}

/////////////////////////////////////
//client code
Man valentine = new Martian(53);
out.println(valentine);    <*2>
Martian marvin = new Martian(22);
out.println(marvin);       <*3>
```

QUESTION 27

Consider the code to the right. What is the output by the line marked `//line 1` ?

A. 2

B. 0

C. 1

D. 3

E. 4

```
int[] list = {65,84,13,42,17};

for(int i = 0; i<list.length; i++)
{
    list[i]%=(i+1);
}

out.println(list[0]); //line 1

Arrays.sort(list);     //line 2
```

QUESTION 28

Consider the code to the right. What does the array look like after completing `//line 2` ?

A. [1, 1, 2, 4, 4]

B. [0, 0, 1, 2, 2]

C. [0, 1, 2, 3, 4]

D. [1, 2, 3, 3, 4]

E. [0, 0, 0, 1, 1]

QUESTION 29

What is returned by the method call `mystery(60)`?

A. !   B. 33

C. 40   D. 7!

E. There is no output due to runtime error

```
public static String mystery(int x)
{
    if(x < 66)
        return "" + 7 + mystery(x + 9);
    return "!";
}
```

QUESTION 30

What is returned by the method call `mystery(0)`?

A. 77777777!   B. 89

C. 56!   D. 7777777733

E. There is no output due to runtime error

QUESTION 31
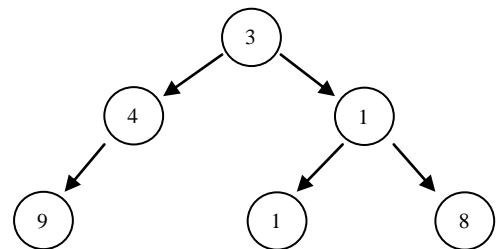
Which of the following is a 4 byte primitive data type ?

A. double   B. int   C. short   D. byte   E. char

QUESTION 32

Given the tree at right, in what order would the nodes be visited using an in-order traversal ?

A. 9 4 1 8 1 3

B. 1 1 3 4 8 9

C. 9 4 3 1 1 8

D. 3 4 1 9 1 8

E. 3 4 9 1 1 8

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QUESTION 33

Which of the following would correctly replace **`<*1>`** in the code to the right?

A. `HashMap<String>`

B. `TreeSet<String>`

C. `Map<String>`

D. `Set<String>`

E. `TreeMap<String>`

```
<*1> sec = new <*1> <String>();

sec.add("Tigers");
sec.add("Tide");
sec.add("Gators");
sec.add("Tigers");
sec.remove("Tigers");
out.print(sec);    //line 2

sec.add("Aggies");
sec.remove("Vols");
sec.remove("Razorbacks");
sec.add("Hokies");
sec.add("Tigers");
out.print(sec);    //line 3
```

QUESTION 34

Assuming **`<*1>`** is replaced correctly, consider the code to the right. What is the output by the line marked `//line 2`?

A. `[Tigers, Tide, Gators, Tigers]`

B. `[Gators, Tide, Tigers]`

C. `[Gators, Tide, Tigers, Tigers]`

D. `[Tigers, Tide, Gators]`

E. `[Gators, Tide]`

QUESTION 35

Assuming **`<*1>`** is replaced correctly, consider the code to the right. What is the output by the line marked `//line 3`?

A. `[Tigers, Aggies, Gators, Razorbacks]`

B. `[Aggies, Gators, Hokies, Tide]`

C. `[Tide, Gators, Aggies, Hokies]`

D. `[Aggies, Gators, Hokies, Tide, Tigers]`

E. `[Tide, Gators, Aggies]`

QUESTION 36

Consider the code to the right. What is the output by the line marked `//line 1`?

A. 9

B. 7

C. 33

D. 17

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

```
PriorityQueue<Integer> q;
q = new PriorityQueue<Integer>();

q.add(17);
q.add(7);
q.add(9);
q.add(33);
q.add(7);
out.println(q.remove());  //line 1

q.add(47);
q.remove();
q.add(23);
q.remove();
q.add(49);
System.out.println(q);    //line 2
```

QUESTION 37

Consider the code to the right. What is the output by the line marked `//line 2`?

A. `[7, 9, 23, 33, 47]`

B. `[17, 23, 33, 47, 49]`

C. `[9, 33, 7, 47, 23]`

D. `[17, 23, 47, 33, 49]`

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

QUESTION 38

What is output by the code to the right?

A. `10010010100`

B. `2`

C. `1001001`

D. `73`

E. `1172`

```
System.out.println(293 >> 2);
```

QUESTION 39

What is output by the code to the right?

A. `i`

B. `""`

C. `hadah`

D. `f`

E. There is no output due to runtime error.

```
String x = "ifihadahifi";
String[] list = x.split("i");
out.println(list[3]);
```

QUESTION 40

What of the following shows the contents of list after the code to the right has executed?

A. `[f, f, hadah]`

B. `[i, i, i, i]`

C. `["", f, hadah, f, ""]`

D. `["", f, hadah, f]`

E. `[f, hadah, f]`