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.

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**QUESTION 1**

What is $24_5$ plus $46_7$ ?

A. $143_7$        B. $111000_2$      C. $111100_2$          D. $120_6$          E. $127_{13}$

---

**QUESTION 2**

What is output by the code to the right?

A. 7.30          B. 14.00

C. 19.60         D. 19.00

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

```
Double a = (double)7.3f;
a = a * 2 + 5;
System.out.printf("%.2f",a);
```

---

**QUESTION 3**

What is output by the code to the right?

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

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

```
Integer b = (int)Math.ceil(9/2);
b = b % 2;
System.out.println(b);
```

---

**QUESTION 4**

What is output by the code to the right?

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

```
Integer cn = 0;
for(int c=14; c>5; c=c-3)
  cn++;
System.out.print(cn);
```

---

**QUESTION 5**

What is output by the code to the right?

A. 0     B. -1     C. true     D. false     E. no

```
String d = "the day the earth stood";
System.out.print(d.endsWith("ood"));
```

---

**QUESTION 6**

What is output by the code to the right?

A. 16.0          B. 20.0

C. 12.0          D. 15.0

E. 22.0

```
double[] ray = {11,9,7,8,4};
System.out.println(ray[1]+ray[2]);
```

---

**QUESTION 7**

What is output by the code to the right?

A. yes          B. no

C. maybe       D. true

E. false

```
boolean wow = false;
boolean wii = true;
wow = !wow && wii;
System.out.println(wow);
```

---

**QUESTION 8**

What is output by the code to the right?

A. 0123          B. 13          C. 123

D. 012           E. 23

```
int grunts = 5;
if(grunts == 6)
  System.out.print(0);
else
  if(grunts == 4)
    System.out.print(1);
else
  System.out.print(2);
System.out.print(3);
```

## QUESTION 9

What is output by the code to the right?

A. 10  7                    B. 8  7

C. 8  6                    D. 6  7

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

```
public class Triop
{
    {
        age = 8;
    }
    public Triop(int n){
        System.out.print(age + " ");
        age=n;
    }
    public int age = 6;
    {
        age = 10;
    }
}

/////////////////////////////////////////
//client code
Triop old = new Triop(7);
System.out.print(old.age);
```

## QUESTION 10

What is output by the code to the right?

A. 10                    B. 15

C. 13                    D. 18

E. 12

```
System.out.println(10 | 7 | 9);
```

## QUESTION 11

What is output by the code to the right?

A. 12        B. 11.0    C. 13.0    D. 13        E. 12.0

```
System.out.println(Math.sqrt(121));
```

## QUESTION 12

What is output by the code to the right?

A. e        B. A        C. d        D. a        E. 0

```
System.out.printf("%c",48);
```

## QUESTION 13

What is output by the code to the right?

A. 0        B. 3        C. 6        D. 9        E. 7

```
int[][] theMat = new int[3][3];
theMat[0] = new int[7];
theMat[0][6]=9;
System.out.println(theMat[0][6]);
```

## QUESTION 14

What is output by the code to the right?

A. 11

B. -11

C. 15

D. 12

E. -12

```
String vals = "theendoftheworld";
int total = 0;
for(int i=0; i<vals.length(); i++){
  char ch = vals.charAt(i);
  switch( ch ){
    case 'd' : total--; break;
    case 'e' : total++; break;
    case 'n' : total-=2; break;
    default : total--;
  }
}
System.out.print( total );
```

## QUESTION 15

What is output by the code to the right?

A. 9        B. 10        C. 11        D. 8        E. 12

```
String j = "waller hs cs";
System.out.print(j.length());
```

| | |
|---|---|
| **QUESTION 16**<br><br>What is output by the code to the right?<br><br>A. `7890`   B. `2345`   C. `\r234`   D. `2340`<br><br>E.  There is no output due to a syntax error. | `System.out.print("7890\r234\r789");` |
| **QUESTION 17**<br><br>What is output by the code to the right?<br><br>A. `0`           B. `5.0`<br><br>C. `5.5`         D. `2.5`<br><br>E. `12.0` | `System.out.println(12.5 % 5);` |
| **QUESTION 18**<br><br>What is output by the code to the right?<br><br>A. `false`       B. `true`<br><br>C. `stop`        D. `0`<br><br>E. `1` | `boolean k = false, m = true;`<br>`System.out.println(k ^ (m && !k));` |
| **QUESTION 19**<br><br>What is output by the code to the right?<br><br>A. `[1, -2, 3, 0, 5, 2, 7, 4, 9, 6]`<br><br>B. `[1, -1, 3, 1, 5, 3, 7, 5, 9, 7]`<br><br>C. `[-2, 2, 0, 4, 2, 6, 4, 8, 6, 10]`<br><br>D. `[-1, 2, 1, 4, 3, 6, 5, 8, 7, 10]`<br><br>E.  There is no output due to a runtime error. | `Integer[] z = {1,2,3,4,5,6,7,8,9,10};`<br><br>`List iList = Arrays.asList(z);`<br>`ArrayList<Integer> n;`<br>`n = new ArrayList<Integer>(iList);`<br>`for(int fun : n)`<br>`  if(fun%2==1)`<br>`    n.set(fun,fun-3);`<br>`System.out.println(n);` |
| **QUESTION 20**<br><br>What is output by the code to the right?<br><br>A. `-.25`       B. `-0.25`       C. `(0.25)`<br><br>D. `(-0.26)`     E. `(0.26)` | `System.out.printf("%(3.2f", -.257);` |
| **QUESTION 21**<br><br>What is output by the code to the right?<br><br>A. `5`     B. `4`     C. `3`     D. `6`     E. `2` | `int bit = 34 | 21;`<br>`int wise = bit >>> 2 ^ 15;`<br>`out.print( wise );` |
| **QUESTION 22**<br><br>What is returned by the<br>method call `what(new int[]{3,14,5,6,7,8,9,90,0})` ?<br><br>A. `8`           B. `-6`<br><br>C. `-4`         D. `-2`<br><br>E. `9` | `public static int what(int[] x)`<br>`{`<br>`  int back=0;`<br>`  for(int it : x)`<br>`  {`<br>`    if(it>0&&it<10)`<br>`      --back;`<br>`    if(it>10&&it<20)`<br>`      back=back+2;`<br>`  }`<br>`  return back;`<br>`}` |
| **QUESTION 23**<br><br>What is returned by the<br>method call `what(new int[]{0,1,15,2,7,11,9,6,8})` ?<br><br>A. `8`           B. `-6`<br><br>C. `-4`         D. `-2`<br><br>E. `9` | |

## QUESTION 24

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

A. 9

B. 5

C. 2

D. 4

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

## QUESTION 25

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

A. 9

B. 5

C. 2

D. 4

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

## QUESTION 26

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

A. 9                     B. 5

C. 2                     D. 4

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

```java
public class That{
   private int num;

   public That(int n){  setNum(n);  }
   public void setNum(int n){
      num=n;
   }
   public int getNum(){  return num;  }
}

public class Zoom{
   public static void up(That a, That b){
      a=b;
   }
   public static void go(That a, That b){
      b=a;
      b.setNum(2);
      a.setNum(4);
   }
}

/////////////////////////////////////////
//client code
That berny = new That(5);
That ernie = new That(9);

out.println(berny.getNum());    //1
Zoom.up(berny, ernie);
out.println(berny.getNum());    //2
Zoom.go(berny, ernie);
out.println(berny.getNum());    //3
```

## QUESTION 27

Which of the following could replace **<*1>** in the code to the right so that the `put()` and `get()` calls would run in constant time?

A. `new TreeMap<Character, Integer>();`

B. `new Map<Character, Integer>();`

C. `new HashMap<Character, Integer>();`

D. A and B only

E. B and C only

## QUESTION 28

Assuming that **<*1>** is filled correctly, what is output by the line marked `//1` in the code to the right?

A. 5        B. 6        C. 7        D. 8        E. 9

## QUESTION 29

Assuming that **<*1>** is filled correctly, what is output by the line marked `//2` in the code to the right?

A. 2        B. 5        C. 0        D. 4        E. null

## QUESTION 30

Assuming that **<*1>** is filled correctly, what is output by the line marked `//3` in the code to the right?

A. 2        B. 5        C. 0        D. 4        E. null

```java
String wrd = "googlemoodle";
Map<Character, Integer> map;
map = <*1>
for(int i=0; i < wrd.length(); i++)
{
  char ch = wrd.charAt(i);
  Integer val = map.get(ch);
  if( val == null )
    map.put( ch, 0 );
  map.put( ch, map.get(ch) + 1 );
}
out.println(map.size());          //1
out.println(map.get('o'));        //2
out.println(map.get('x'));        //3
```

### QUESTION 31

What is output by the code to the right?

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

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

```
int[] stuff = {1, 2, 3, 4, 5, 6};
Iterator<Integer> it;
it = stuff.iterator();
it.next();
System.out.println( it.next() );
```

### QUESTION 32

What type of tree traversal is shown by the code to the right?

A. in-order traversal

B. post-order traversal

C. pre-order traversal

D. reverse-order traversal

E. level-order traversal

```
public void print(TreeNode tree)
{
   if(tree != null)
   {
      print(tree.getRight());
      out.println(tree.getValue());
      print(tree.getLeft());
   }
}
```

### QUESTION 33

Given the graph at right, how many edges are present?

A. 8      B. 10      C. 9      D. 11      E. 12
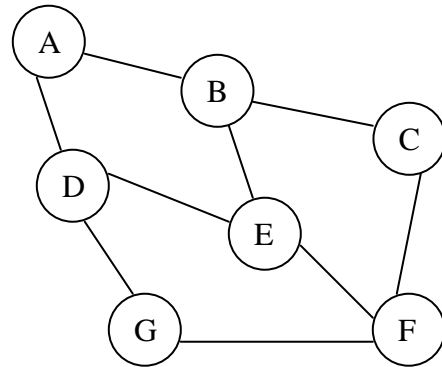
### QUESTION 34

Given the graph at right, how many vertices are present?

A. 11      B. 9      C. 8      D. 10      E. 7

### QUESTION 35

Given the graph at right, how many neighbors does E possess?

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

### QUESTION 36

Which of the following replaces **<*1>** in the code to the right so that method run will return the smallest value in ray?

A. ray[0]

B. ray

C. x

D. who

E. ray[i]

```
public class Toob
{
  public static int run(int[] ray)
  {
    int who = ray[0];
    for(int i=1; i<ray.length; i++)
    {
      int x = ray[i];
      if(x<who)
        who=x;
    }
    return <*1>;
  }
}

/////////////////////////////////////////////
//client code
int[] stuff = {-19,81,172,61,-24,80,-211};
out.println(Toob.run(stuff));    //1
```

### QUESTION 37

Assuming that **<*1>** is filled correctly, what is output by the line marked //1 in the client code to the right?

A. -19      B. 172      C. -211      D. 61      E. 80

---

### QUESTION 38

Assume that method `superSort(Object[] objs)` is $O(N^3)$ where $N = obj.length$. When method `superSort` is passed an Object array of length 10000 it takes 4.0 seconds for method `superSort` to complete. If method `superSort` is passed an Object array of length 5000, how many seconds would it take `superSort` to complete?

A. 1.0

B. 0.5

C. 2.0

D. 8.0

E. 0.0125

---

### QUESTION 39

Which of the following could replace **<*1>** in the code to the right so that the `if` statement would check to see if the loop's current `String` contains `ow` ?

A. `that.matches(".*ow.*")`

B. `that.matches(".+ow.+")`

C. `that.matches(".+ow.*")`

D. A and B only

E. A, B, and C

### QUESTION 40

Assuming that **<*1>** is filled correctly, what is output by the line marked `//1` in the code to the right?

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

```
String xs =
        "cowhowearsowbowdoweowaow";

xs=xs.replaceAll("and","");

String[] list = xs.split("[eshb]");

Integer tally = new Integer(0);

for(String that : list)
  if( <*1> )
    tally = tally.intValue()+1;

out.println(tally);      //1
```