$\qquad$

| 1. What has to be true about a data set before you can use a binary search algorithm on with it? | 2. What is wrong with the following recursive method? ```public static int doit(int a) { return a + doit(a-1); }``` |
| :---: | :---: |
| ```3. What is printed by the call review(1)? public static void review(int a) { if(a<7) review(a+3); System.out.print(a+" "); }``` | 4. What is printed by the call review( 8 )? ```public static void review(int a) { System.out.print(a+" "); if(a<10) } review(a+1);``` |
| 5. What is returned by the call review(10)? ```public static int review(int a) { if(a>15) return 1; return a + review(a+3); }``` | 6. What is returned by the call review(10)? ```public static int review(int a) if(a==8) return 1; return a * review(a-1); }``` |
| 5. Write a recursive method changeOX which returns a given String with any occurrence of the letters "ox" replaced with an "oo". So "xbox" returns "xboo". <br> public static String changeOX(String str) <br> \{ <br> \} |  |
| 6. Write a recursive method addDigitsExcept7s length except that it skips any 7s. So sending 127 <br> public static int addDigitsExcept7(int n) <br> \{ <br> \} | returns the sum of all the digits in a number of any rns 3, and sending 1024 returns, ironically, 7. |

7. The following questions deal with this array and a binary search algorithm.
```
int[] array = { 1, 3, 7, 10, 13, 16, 19, 22, 25 };
```

Which is the first value (value, not index) checked when a binary search algorithm is used to search this array for 12 ?

What is the second value checked?
What is the third value checked?
What is the fourth value checked?
What is the final result returned?
8. Write a recursive method that adds all the integers from 1 up to the integer sent in (assume the parameter is greater than 1 ). So sending in 3 returns $6(1+2+3)$ and sending in 4 returns 10 .

```
public static int addEmUp(int n)
```

\{
\}
9. Write a recursive method that adds all the integers divisible by 3 from 3 up to the integer sent in (assume the parameter is greater than 3). So sending in 6 returns $9(3+6)$ and sending in 17 returns $45(3+6+9+12+15)$

```
public static int iHeart3s(int n)
```

\{
\}
10. How many times will this code print "Hi" if you call sayHi(5)?

```
public static void sayHi(int n)
    {
        if(n>3) sayHi(n-1);
        System.out.println("Hi");
    }
```

