Exam Set 11E Solutions
AP Computer Science A

Name _____ Period_____

1. The simulation below counts the number of coin flips it takes to achieve a specified number of heads in a row. Once the number of heads is achieved, the simulations stops and prints the number of coin flips. Consider the following output for different conditions.

Specified heads	**Output**
`int numHeads = 4;`	30 flips
`int numHeads = 12;`	10000 flips

Complete the CountHeads class below.

```
Public class CountHeads{

          public static void main(String args[]){



      int numHeads = 30;
      int headsCount = 0;
      int flips = 0;

      while(headsCount < numHeads){
            int result = (int)(Math.random()*2);// 0 or 1

            if(result == 1){
                  headsCount++;
            }else{
                  headsCount = 0;
            }

            flips++;
      }
      System.out.println(flips);









          }
}
```

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2. Write the following for-loops as while loops

(a)

```
int y;

for(y = 5; y < 10; y+=2)
{

    System.out.println(y);
}
```

(b)

```
for(int z = 10; z > 0; z--){

    System.out.println(z);

}
```

```
int y = 5;
while(y < 10){

     System.out.println(y);


y+=2;
}
```

```
int z = 10;
while(z > 0){

     System.out.println(z);


z--;
}
```

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3. What is the output for each code segment below,

(a)

```
int m = 0;
int j = 0;

do{
j *= -1;
     if(j >= 0){
      m += 2;
     }
j+=2;

}while(m < 4);

System.out.println(j);
```

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(b)

```
int i = 5, j = 0;
do{

     for(j = 0; j < i; j++){
          System.out.print("*");
     }
     System.out.println();
     i--;

}while(i > 0);
```

*****
****
***
**
*

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Score _____/20

4. The Magic 8 Ball is a plastic sphere resembling an 8-ball. Inside is a floating die with 20 faces. Each face has an affirmative, negative, or non-committal statement printed in raised letters. These messages are read through a window on the ball's bottom in response to a "yes" or "no" question. Finish the Magic8Ball class which simulates a Magic 8 Ball. <u>You simulator needs to produce messages for the first 2 cases only</u>. Once the message is displayed, prompt the user if they would like to play again. If the user types "y", the simulation will continue to run.

```
Public class CountHeads{

          public static void main(String args[]){



      Scanner s = new Scanner(System.in);
      String msg = "", prompt = "", q = "";
      do{
      System.out.println("Ask me a yes/no question");
      q = s.nextLine();
      int result = (int)(Math.random()*2);

      switch(result){
            case 0:
                  msg = "NO!";
                  break;
            case 1:
                  msg = "YES!";
                  break;
      }
      System.out.println(msg);
      System.out.println("Do you want to play again? (y)");
      prompt = s.nextLine();
      }while(prompt.equals("y"));









          }
}
```

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Score _____/20

Score _____/20