1. What is the output of the following Java program?

```
public class Trick
{
    public static void main(String[] args)
    {
        int i = 10, n = 0;
        for (; n < 10; n++)
        {
            i = n / 2;
        }

        System.out.print(i + i + "" + n + n);
        System.out.println(i + "" + (n + n));
    }
}
```

2. Convert the for-loop construct in the following snippet of Java code into an equivalent while loop construct.

```
int j = 0;
for (int i = 100; i > 0; i -= 5)
{
    j += 3 * i;
}
System.out.println(j);
```

3. Write a **complete** Java program that displays the string “Hello World!” to the console. Assume that the file-name of this program is HelloWorld.java.

4. List the order of the statements in the following Java program as they would be executed **and** show what the program would output.

```
    abstract class Pet
    {
        protected String name;
        protected int age;

        public Pet(String a, int b)
        {
1:          name = a;
2:          age = b;
        }

        public void grow()
        {
3:          age++;
        }

        public String toString()
        {
4:          return name + ":" + age + " years old.";
        }
    }


    class Cat extends Pet
    {
        public Cat(String name, int age)
        {
5:          super(name, age);
        }
    }
```

```
    class Dog extends Pet
    {
        public Dog(String name, int age)
        {
 6:         super(name, age);
        }
    }


    public class Home
    {
        public static void main(String [] args)
        {
 7:         Pet mydog = new Dog("Spike", 5);
 8:         Pet mycat = new Cat("Tom", 3);
 9:         System.out.println(mycat + "\t" + mydog);
 10:        for (int i = 0; i < 2; i++)
            {
 11:            mydog.grow();
 12:            mycat.grow();
            }
 13:        System.out.println(mycat + "\t" + mydog);
        }
    }
```

5. Given the following code below, write the output. There is a place to put your output at the end of the code. Write the output for each trick AND give a short explanation of the trick(s) used and why the answer is what it is. Do this for each of the 4 trick questions. Syntax highlighting has been purposefully omitted for this code.

```
class Trick2 {
  public Trick2() {
    int counter = 0;
    while (counter > 10);
      counter++;
    System.out.println(counter + counter + "");
  }
}
```

```
class Trick3 {
  public Trick3(boolean run) {
    if (run) {
      int counter = 1;
      while (counter > 10)
      counter++;
      float number = 10 / counter;
      System.out.println((int)number + "");
    }
  }

  public String toString() {
    return "0";
  }
}



class Trick4 extends Trick3 {
  public Trick4() {
    super(false);
  }

  public String tostring() {
    return "1";
  }

  public void toString(int x) {
    x = 2;
    System.out.println(x);
    return;
  }

  public String ToString() {
    return "3";
  }

  public void Tostring() {
    System.out.println("4");
    return;
  }
}
```

```
class Trick5 {
  public Trick5() {
    // float value holding average grade per student
    int count = 5;

    // adds a value of 1 to count
    count += 2;

    // calls the barr fuction
    //count *= foo();
    count++; //; /**= foo();*/
    count /* *= ba/*r*/ *= baz(); //foo();

    // this code doesn't work for some reason
    float num = (float)(int)(float)(count + 0.5f);

    // displays the first frame in Halo 5: Guardians
    System.out.println("" + (int)count + (int)num);
  }

  private int bar() {
    return 3;
  }

  private int foo() {
    return 4;
  }

  private int baz() {
    return 5;
  }
}

public class Tricky {
  public static void main(String[] args) {
    System.out.print("Trick1: ");
    Trick1 t1 = new Trick1();

    System.out.print("Trick2: ");
    Trick2 t2 = new Trick2();

    System.out.print("Trick3: ");
    Trick3 t3 = new Trick3(true);

    System.out.print("Trick4: ");
    Trick4 t4 = new Trick4();
    System.out.println(t4);

    System.out.print("Trick5: ");
    Trick5 t5 = new Trick5();
  }
```

```
}
```

Output and Explanations for tricks: