CS 100: Section Assignment 4

(For the week of February 22)

Section assignments are discussed in section and are not submitted for grading. They relate to recent lecture topics and usually to the current Programming Assignment. Prelim questions are based on Section Assignments, Programming Assignments, and Lecture examples.

Refer to the following class discussed in lecture:

```
public class MyTrig{
   // Constants for converting degrees to radians and vice versa.
   public static final double DEG2RAD = Math.PI/180;
   public static final double RAD2DEG = 180/Math.PI;

   // Displays the value of x, assumed to be in degrees
   public static void displayDeg(double x) {
      System.out.println("The angle is " + x + " degrees");
   }
   // Yields the cosine of x assuming x given in degrees.
   public static double cosD(double x){
      double y;
      y = Math.cos(DEG2RAD*x);
      return y;
   }
   // Yields the value of x (radians) to the nearest degree.
   public static int nearest(double x){
      int a;
      a = (int) Math.round(RAD2DEG*x);
      return a;
   }
   // Yields the degree equivalent of d degrees + m minutes + s seconds.
   public static double convert(int d, int m, int s){
      double z;
      z = d + (double)m/60 + (double)s/3600;
      return z;
   }
   // Yields the cosine of d degrees + m minutes + s seconds.
   public static double cosDMS(int d, int m, int s){
      double t;
      t = cosD(convert(d,m,s));
      return t;
   }
}
```

1. Write a fragment that prints $\cos(0^o)$, $\cos(1^o)$,…, $\cos(90^o)$. Make effective use of `cosD`.

2. Implement a method `sinD(double x)` that computes the sine of x from the formula $\sin(x) = \cos(90\text{-}x)$. Make effective use of `cosD`.

3. Implement a method `public static  double randomAngle()` that returns a random value between 0 and 90. Make effective use of `Math.random().`

4. What is the output when the following main method fragment is executed:

```
double t = 20.1; int s=30; int m=0; int d=15;
double z = MyTrig.convert(s,d,m);
System.out.println(z + “  “ + t);
double z = MyTrig.convert(m,s,m);
System.out.println(z + “  “ + t);
```