**Homework 9**

**Use the skeleton code provided on AsULearn to get started. You will have to create a BlueJ project for this homework. Don’t forget to add the tests to your project and run them for feedback and insights on errors. Submit your final, compiled code to AsULearn by the due date.**

Area Class

Write a program in the **Area** class that:

* has three overloaded static methods for calculating the areas of the following geometric shapes:
  + Circle
    - Area of a circle: Area = π \* r2, where π is Math.PI and r is the circle’s radius
    - Radius is of type double.
  + Rectangle
    - Area of a rectangle: Area = width \* length
    - Length and width are of type int.
  + Cylinder
    - Area of a cylinder: Area = π \* r2 \* h, where π is Math.PI, r is the radius of the cylinder’s base, and h is the cylinder’s height
    - Radius and height are of type double.

Note: Because the three methods are to be overloaded, they should each have the same name, but different parameter lists. There should only be these three methods in your Area class.

Month Class

Write a program in the **Month** class that:

* has an int field named **monthNumber** that holds the number of the month.
* has a **no-arg** constructor that sets the monthNumber field to 1.
* has a constructor that accepts the number of the month as an argument. It should set the monthNumber field to the value passed as the argument. If a value less than 1 or greater than 12 is passed, the constructor should set monthNumber to 1.
* has a constructor that accepts the name of the month, such as “January” or “February”, as an argument. It should set the **monthNumber** field to the correct corresponding value.
* has a **setMonthNumber** method that accepts an int argument, which is assigned to the monthNumber field. If a value less than 1 or greater than 12 is passed, the method should set monthNumber to 1.
* has a **getMonthNumber** method that returns the value in the monthNumber field.
* has a **getMonthName** method that returns the name of the month. For example, if the monthNumber field contains 1, then this method should return “January”.
* has a **toString** method that returns the same value as the getMonthName method.
* has an **equals** method that accepts a Month object as an argument. If the argument object holds the same data as the calling object, this method should return true. Otherwise, it should return false.
* has a **greaterThan** method that accepts a Month object as an argument. If the calling object’s monthNumber field is greater than the argument’s monthNumber field, this method should return true. Otherwise, it should return false.
* has a **lessThan** method that accepts a Month object as an argument. If the calling object’s monthNumber field is less than the argument’s monthNumber field, this method should return true. Otherwise, it should return false

Note: You may find it helpful to write helper methods for this class to aid in converting to and from number to name.

Please complete the Javadoc comments and add any comments you believe

are necessary to determine what the program is doing.

Make sure that your code compiles! **If your code does not compile, then you will receive a 0 on this assignment.**