Name ____ Period ________ Logic and Computation

Lab: Processing Arrays of Objects

Directions: Create the classes and methods required to solve each of the problems in the given in the scenarios below. Create these files in a new project with the following name: **P#LastFirstArraysLab**. But instead of #, put your period number; instead of Last, put your last name; and instead of First, put your first name.

1.**Ronda's Royal Rug Store:** A store that buys and sells fine rugs is modernizing their inventory management system and intends to keep electronic records of their stock. For starters, they want you to develop a datatype to represent the features of a rug: its length, its width, its purchased price, and its sales price, all of which are decimal values. Next they would like an inventory management class that has the ability to answer certain questions about their inventory. Use the following class definitions to get started:

```
class Rug
{
      // Your code goes here
}

class InventoryManagement
{
      static Rug[] inventory = {new Rug(64, 80, 925.5, 1499.99),
                                new Rug(48, 96, 1025, 2249.99),
                                new Rug(24, 180, 899, 1989.99),
                                // more examples can be added if you wish
                                };

      // Your methods go here
}
```

Requirements:

- The client requires the inventory management system to calculate the area of a single rug and the combined area of all of their rugs (two separate methods).
- The system should calculate the profit margin of a single rug and the combined profit of all of their rugs (two separate methods).
- The system should calculate the average sales price of the rugs in their inventory.
- The system should calculate the sales price per square foot of a single rug.
- Finally, it should find the most expensive and least expensive rug in their inventory in terms of sales price per square foot. These methods should return a Rug object.

2. **The Road Runners Club:** A running club would like to develop a custom application for their members to record statistics for their daily jogs. The interface should allow a runner to record values for the miles, hours, minutes, and seconds of a jog along with the name of the member, all of which will be recorded in the app as a custom datatype. Next they will need a running statistics class that has the ability to keep track of the progress of the joggers in their club and allow the club to award various motivational prizes to their members:

```
class Jog
{
      // Your code goes here
}

class RunningStats
{
      static Jog[] jogs = {new Jog(5, 0, 44, 56, "Alicia"),
                           new Jog(7.5, 1, 14, 33, "Bob"),
                           new Jog(10, 2, 1, 21,"Alicia"),
                           new Jog(8, 1, 20, 18,"Carl"),
                           new Jog(2, 0, 14, 18,"Dennis"),
                           // more examples can be added if you wish
                           };

      // Your methods go here
}
```

Requirements:

- The client wants to track the total distance run by the entire club.
- They want to track the total time run by the entire club (in seconds).
- They want to give awards for the longest jog and the longest time spent running during a single jog (two separate methods). These methods should return the name of the member in each case.
- They also want to give a special award for the best time per mile. This should also return the name of the member who wins.
- Finally, they want to record the average time per mile of all of the jogs for the entire club considered as a whole.