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# Homework 1 Report

While working on this assignment I learned a lot of new things. I learned more about abstraction; an example of how I used abstraction was by hiding the details of calculating the area for the Shapes and by calculating the foci for an Ellipse. I also learned more about modularity. I used modularity by splitting out the functionality of all the shapes into different classes, each class had its own purpose. Each shape had a test class making testing easier.

While coding the assignment I had many struggles along the way. The biggest struggle I had was remembering how to code in Java. I've been bouncing around languages for a few semesters so remembering the syntax was a challenge. I've never done unit testing before, but testing helped me to discover problems that I might not have caught otherwise. Also during testing I often got confused when a *try catch* was needed. I learned that a *try catch* is used if a test is expected to fail.

When I was working on the *move()* function for Rectangle I discovered the importance of making a copy of the points during creation and when a getter was used, so that when *move()* was used the user couldn't do any damage to the original points. In the Ellipse class in addition to the *move()* function I also added a *moveTo()* function, it seemed useful to have a function to move directly to a certain point. In the Point class I added a *equals()* function to test if two points were equal instead of checking if x and y for each point were the same, it made the code easier to follow. To test if Rectangle and Square had all right angles I created a diagonal across the bottom left and top right corners, I used the pythagorean theorem to check if the sides made a right angle. After I finished Rectangle, Square was very easy I just had Square extend Rectangle and added an additional test to Square to check if all side lengths were equal.