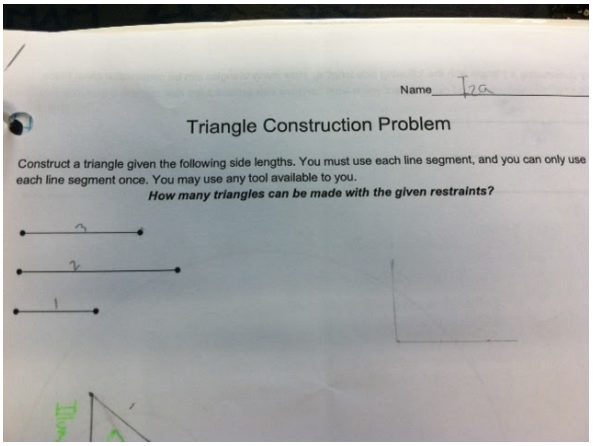
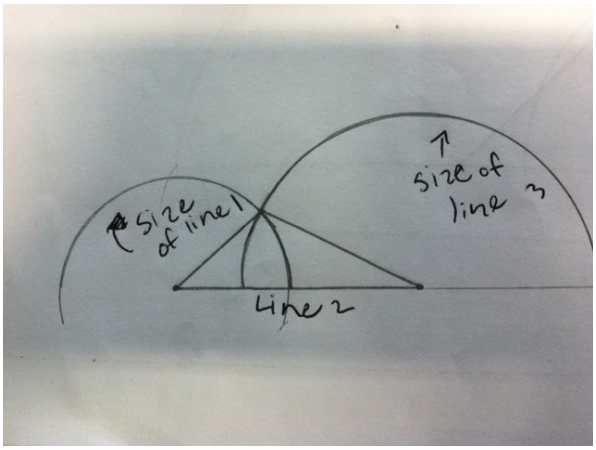
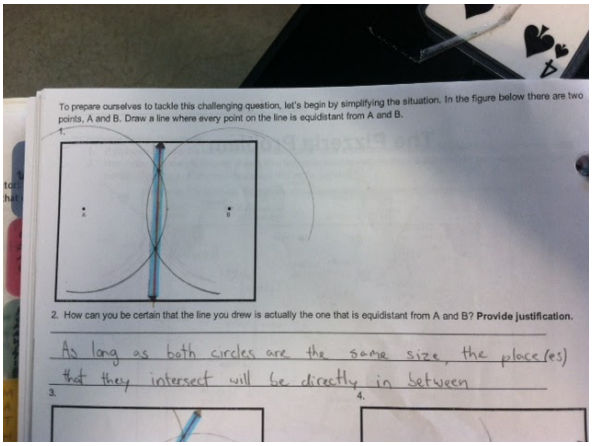
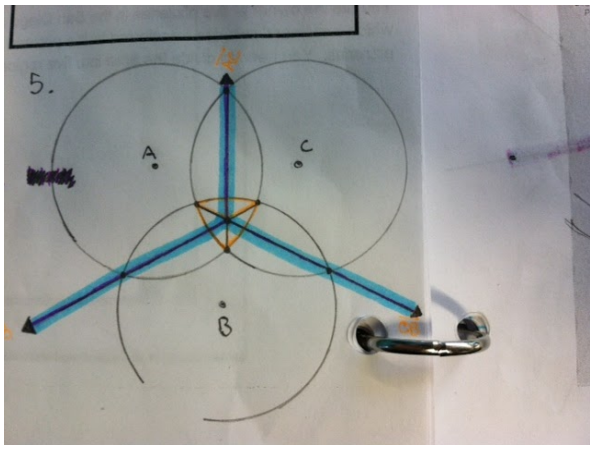
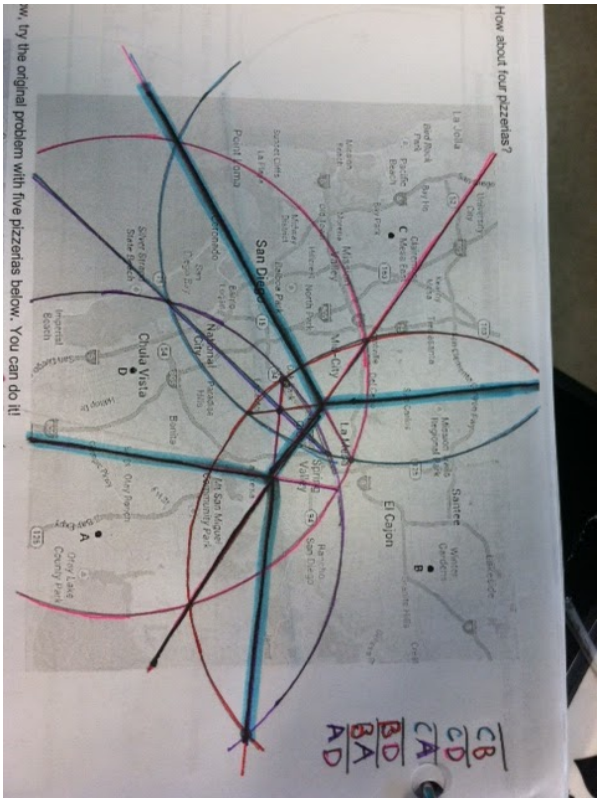
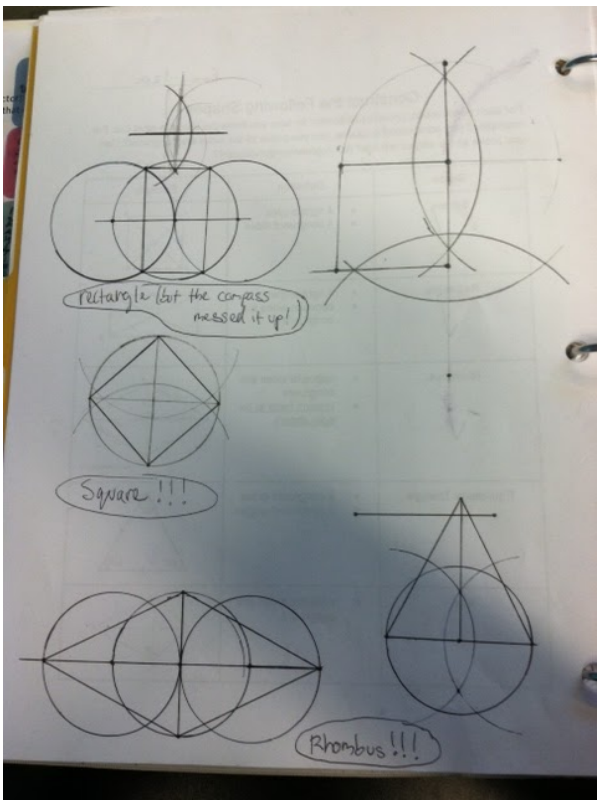
I can construct a perpendicular bisector because...

Image	Narrative
	**My first attempt:** When we were given our first constructions packet, I had no idea where to start. The concept seemed simple: Take these 3 lines, put them together, make a triangle. For some reason, I couldn't figure out how to do it. Everything I tried ended up slightly off, and the measurements I took were not very accurate.
	**Understanding the compass:** It wasn't until people began to share their ideas that I understood. Ethan, a fellow student, showed us his way to do the problem. If you take one of the lines and draw it as a base, you can then measure another one of the lines and make a circle of the same size (using one of the end points of your previous line as the center). By doing this, you can see every possible angle that your two lines can make. If you then repeat that process with your last line on the opposite point of the base, you can see the exact point where the two lines will meet, and just connect the dots.
	**Understanding the perpendicular bisector:** In the previous problem, we created some form of this concept, but rather than making a line that was of equal distant to both point A and B on the line, we used specific line measurements to create the triangle we wanted. All we had to do to get a perpendicular bisector from there, was make both circles the same size. When the circles are the same size (and the radii measure over half of the distance of the line itself), you simply draw a line that passes through the

	two intersecting points. That line is now of equal distance to both sides of the line. It is called a perpendicular bisector because it creates intersecting lines that create a right angle (perpendicular), and splits the line into two equal pieces (bisector).
 	**Pizzeria Problem:** To understand the concept even better, we then experimented with a new type of problem. In this problem, we had to divide the map of Chula Vista into 5 equal sections from 5 points. The points represented Pizzerias that needed a delivery area. We started by simplifying the problem. Our first task was to do the same with only 2 points. This one was simple, all we had to do is what I explained in the previous box. 3 points was the next step. It took us a little while, but eventually we realized that the key was to just focus on splitting 2 points at a time, from there you can map out a figure that will split up all of the sections. We then continued with 4 points, and eventually we could complete the problem with 5.



Applying the perpendicular bisector to other constructions:

After so much practice/experimenting, we all started to see patterns. These patterns could show us exactly how the lines, angles, and points interacted with each other. When you get to this point with any topic, you can then proceed to take these "rules" that you've learned, and create all sorts of shapes! We spent the next week or so of class just applying our knowledge and creating new shapes. When we didn't understand something, we could now form a hypothesis, and/or try methods that have worked before until could work out the problem and find out exactly how to manipulate the shapes to our advantage.

1. *What does it mean to do constructions?*

Constructions are a way of creating and understanding the interaction between shapes. To do constructions, you need to be able to see how the angles, lines, and points will change when you manipulate them, and you will need to use certain techniques to do so.

2. *What's the point of even doing constructions? You already know what these shapes are. Why bother creating them from scratch?*

Because without breaking down the shapes themselves, and creating them over again, you only have this "thing". When you look at the shape piece by piece, and experiment with the way it changes when you do so, you begin to see patterns and create rules. Without constructions, it's like reading the table of contents in a book; You know what is going to happen, but why is it happening? It's not like these things are just magically created, there is so much reasoning behind them that you have to understand before you can use them in the future. Can you have a conversation about Harry Potter when all you know is that there is a wizard boy who goes to school? No, you can't. Can you argue about politics when all you know comes from bits and pieces that you heard from friends? No, people do it, but no. Simple shapes like what we've been learning about are the basis for almost all geometry, without understanding them, all you are doing is memorizing formulas.

3. *What's the point of learning how to use a compass? It's unlikely you'll use them in the future*

This one is simple, the compass only assists you in making accurate lines and circles, you still need to push yourself to think. With a protractor, there is no thinking behind what you are doing, and you won't come to any conclusions about your shapes. You shouldn't have to rely on a protractor to do your math homework for you, you should be able to do it with a piece of string and a straight edge.