How to Construct Triangles

Subject: Geometry | Grade level: 9th-10th Grade | Teacher: Gunzelman
Date: 11/1/12 | Campus: Del Valle HS

*Independent Practice *Cooperative Learning *Visuals	*Whole group Instruction *Technology Integration *Group/Directed Practice	
TEKS/Standards: 8.4A - Patterns, relationships, and algebraic thinking. The student makes connections among various representations of a numerical relationship. The student is expected to generate a different representation of data given another representation of data (such as a table, graph, equation, or verbal description). 8.5A - predict, find, and justify solutions to application problems using appropriate tables, graphs, and algebraic equations. 8.5B – find and evaluate an algebraic expression to determine any term in an arithmetic sequence (with a constant rate of change).		Homework: (None)
Time 52 minutes Students will use a compass and pencil to construct different triangles. **50 minutes**	Procedures & Objectives for Lesson Activities Today's lesson will be centered on learning how to construct triangles. Students will be using a compass and pencil to construct 30-60-90, acute, and congruent triangles.	Materials needed -Compass -Pencil -How to Construct a Triangle. -Doc Cam
Introduction: Class Explanation Students will receive instruction for the class and triangle construction. **5 minutes**	Today we are going to learn how to construct three different types of triangles. In constructing a triangle, we are to use these compasses (hold up the compass). A compass is used to make perfect circles, but today we are going to be using it to make measurements on triangles and hopefully see the link between triangle construction and circles. Quickly, when you look at your paper that you picked up on the way in the door you will notice that there is, on the first page, a rectangle on	-Compass -Pencil -How to Construct a Triangle. -Doc Cam

	the right side of the page. To begin, we will be constructing our triangle in that rectangle on the right side of the page.	
LESSON	STRUCTURE/ACTIVITIES	Lectures
1st Activity: Whole group Instruction Students will construct a congruent triangle using a compass. **10 minutes**	Constructing a congruent triangle is very simple in that we will be using our compass to measure the lengths of each side to reconstruct the triangle. Begin by simply drawing the base of the triangle parallel to the bottom of the page. Now, you have the base constructed we want to draw an arc at the same length as one of the sides. So, we open our compasses to the same length as DF and draw an arc. IMPORTANT TO UNDERSTAND: We know that every point on this arc is exactly the same length as DF. Next we want change the measure of our compass to the same length as EF. The we can create another arc where every point on the arc is the same length as EF. Now, there is only one point at which both EF and DF are the same length. Can anyone guess where that point is? (student response) It's at the intersection of the two arcs! Now we have reconstructed our congruent triangle.	-Compass -Pencil -How to Construct a Triangle. -Doc Cam
2nd Activity: Cooperative Learning Students will construct a congruent triangle using a compass.	Now turn your paper over and reconstruct the triangle that is there. I will walk around the room and help if you have any questions. (monitor to keep students on task and help answer any questions).	-Compass -Pencil -How to Construct a Triangle.

10 minutes		
3rd Activity: Whole group Instruction Students will construct an equilateral triangle using a compass. **10 minutes**	Now let's take a look at our second page and construct an equilateral triangle. First, define an equilateral triangle. (student response) All sides and angles have the same measure. Therefore, use your compass to measure the distance between the two points, A and B. Then make two arcs from A and B using that measure. Where those arcs intersect, we know that this is the only point at which the third vertex of our equilateral triangle can exist. Now we just need to make our lines that connect our equilateral triangle's vertices.	-Compass -Pencil -How to Construct a Triangle. -Doc Cam
4th Activity: Whole group Instruction Students will construct a 30-60-90 triangle using a compass. **10 minutes**	In a similar fashion as used with the other two triangles, walk the students through the construction of a 30-60-90 triangle using the doc cam and a compass of your own.	-Compass -Pencil -How to Construct a Triangle. -Doc Cam

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CLOSURE **5 minutes**	What do you know about the distance of an arc from the point at which it is referenced? How is this fact (the consistent distance of an arc from a point) important to the construction of a triangle?	