District Assessment #2 Review

Subject: Geometry | Grade level: 9^{th}-10^{th} Grade | Teacher: Gunzelman
Date: 11/6/12 | Campus: Del Valle HS

<table>
<tr><td colspan="2">*Independent Practice *Whole group Instruction
*Cooperative Learning *Technology Integration
*Visuals *Group/Directed Practice</td><td></td></tr>
<tr><td colspan="2">TEKS/Standards:
(3) The student applies logical reasoning to justify and prove mathematical statements. The student is expected to:
(B) construct and justify statements about geometric figures and their properties
(8) Congruence and the geometry of size. The student uses tools to determine measurements of geometric figures and extends measurement concepts to find perimeter, area, and volume in problem situations. The student is expected to:
(C) derive, extend, and use the Pythagorean Theorem; composites of these figures in problem situations;
(10) Congruence and the geometry of size. The student applies the concept of congruence to justify properties of figures and solve problems. The student is expected to:
(B) justify and apply triangle congruence relationships.

Whole Class Summary
All class will be spent reviewing for the district assessment that the students will be taking Tuesday, November 13, 2012. The class will highlight 6 weeks of material briefly as a review for students.</td><td></td></tr>
<tr><td>LESSON

1st Activity: Whole Group Instruction

<u>15 minutes</u>

Students will recall the definitions</td><td>STRUCTURE/ACTIVITIES

I need you to pull out your quiz review sheets that you picked up on your way in the door. Tomorrow we are having a district assessment over these exact materials. Honestly, I know that all of you are fairly familiar with these materials, so my hope is that you all will pass this test.

Starting off, I want you to look at the first page of this packet (the one with all of the definitions). If you know all of these definitions and can draw examples of them, you will pass this test. Most of you know these with some confidence, but I would recommend you study a little more tonight so that you will do well on</td><td>MATERIALS

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with specific emphasis on exterior angles, and point of concurrency	your test tomorrow. **There are two definitions that I would like to show you before we go on to the next page however. Know the definition of exterior angles.** We know what interior angles are. What are interior angles? (student response) They're the angles on the inside of a polygon. In contrast, exterior angles are the angles on the outside of a polygon. (draw a picture that reveal the exterior angles of a triangle). **The second definition is the "Point of Concurrency."** Do we remember what the point of concurrency is? Anybody? (Student response) The point of concurrency is the location in which three lines all intersect. The reason that this definition is so important is because the incenter, circumcenter, orthocenter, and centroid are all four different examples of "points of concurrency" **Let's now turn over our papers to our next page.** Numbers 1-4 are all definition that can be found on the definitions page that we just turned from on the review. **Let's look however at numbers 5-8.** On number 5 it asks us to draw the median that passes through point A. What was the	

	definition of a median from the definition page? (student response) Given that definition, I know that my median passing through point A, which is a vertex, should also intersect the midpoint of the other side. Let's draw that on our review. (Sketch the midpoint for #5 on the review using the Doc Cam). #6 asks us to draw the altitude. What's our definition of an altitude? (student response) This altitude must pass through vertex B and intersect the opposite side at a 90 degree angle by definition. Let's draw that on number 6. (sketch the altitude for #6 using the Doc Cam). In number 7 we are drawing an angle bisector and we know that the definition states that it cuts an angle in half. Let's sketch that on number 7. However, which angle are we bisecting? (student response) We're bisecting point C. (sketch again using Doc Cam). Lastly, number 8 asks for a perpendicular bisector passing through side AC. By our definition, we know that it must pass through the midpoint. What kind of angle must it create with that side of the triangle? (student response)	

	Let's make sure this angle bisector looks like it intersects the side at a 90 degree angle. **Now let's look at the points of concurrency at the bottom of that page.** When we look at the first triangle at the bottom left of our page, is it a median, altitude, perpendicular bisector, or angle bisector that we see on this triangle? (student response) Notice how it passes through a vertex and intersects the opposite side at a 90 degree angle. These are altitudes. What do we call the point in which all three altitudes intersect? (student response) That's the orthocenter. **The next triangle, we can see three medians.** What is this point of concurrency called? (student response) It's called the centroid. **Next we have three angle bisectors.** Where three angle bisectors intersect is called the incenter **Lastly, we have three perpendicular bisectors.** What is the intersection of three perpendicular bisectors called? (student response)	

	It's the circumcenter.	
2nd Activity: Whole group instruction: Students will recall the four different checks for congruency (SSS, ASA, SAS, AAS) and properties of isosceles triangles. **5 minutes**	**Let's now look at the next page #'s 9-12.** Here we are asked to prove that the triangles are congruent given certain pieces of information. Again, what are the four congruencies that we use to prove that two triangles are congruent? (Student Response) Where S = side and A = angle, we can use SSS, SAS, ASA, AAS. (Remember that we cannot use SSA!) **Now, let's just look at the first question.** If we were given that EB is congruent to BD, how would we conclude that EBA was congruent to DBC? Again, we know that EB = BD (that's what we were given. We also know that AB = BC because triangle ABC is an isosceles triangle. We're still missing our third piece of information however. As of now, we have two sides are equal to each other. Can we prove that these two triangles share another angle or side? (student response) Are they sharing any sides? (student response) No, they're not. What about angles? (student response)	District Assessment Review

	Angle EBA and angle DBC are vertical angles, aren't they? So, the two triangles also have these angles in common. Additionally, this angle is found between the two sides. This means that the two triangles are congruent using SAS. The rest of these problems are solved similarly.	
3^{rd} Activity: Whole Group Instruction Students will recall the formula for finding the area of a triangle and apply it to their knowledge of midsegments. **<u>5 minutes</u>**	**Let's now look at #13.** **(read the problem to the students)** What is the problem asking us to find? (student response) It's asking us to find the area of the shaded portion of the triangle. If we are going to do this we need to know the formula for finding the area of a triangle. Does anyone know this formula? (student response) The formula is $A = ½ (bh)$ Now, if we can figure out all of the dimensions of each of the shaded triangles we can solve this problem. Let's go back to reading our problem. What does the scenario tell us about the dimensions of the bigger square? (student response) It has a length of 8 ft. (write that down on the picture)	District Assessment Review

	Additionally, what do we know about the inner square? It's constructed by connecting all of the midpoints. This means we know that each smaller horizontal or vertical segment has a length of 2 ft. We know this because 4 smaller segments create the larger segment (which has length of 8 ft). With this information we can now calculate the area of each shaded triangle because we know the lengths and heights of each shaded triangle. **Do we have any questions about how we would calculate the areas of these triangles?** (we must move on to completely review all necessary materials).	
4^{th} Activity: Whole Group Instruction: Students will recall how to generate a specific equation given two points. **<u>10 minutes</u>**	**Numbers 14 and 15 we do not have time to completely review in class.** However, I want you to complete it at home tonight and bring back tomorrow morning any questions that you may have for me. **ALL** information that you need to solve the problem for #14 is: Def. of a median Midpoint equation: Slope equation: y-intercept equation: There is also a way to draw the triangle, and without using any of the equation, if you know how the y-intercept equation is used, we can construct our equation. For example, if we construct our triangle and draw the median, we can notice that our slope is going "up 2, and right 1." This means that	District Assessment Review

	slope= 2/1. We also can notice that our line is crossing the y-axis at "3." This means that b = 3. Therefore, our equation is y = (2/1)x + 3 or y=2x+3. **For #15 we need the same information as #14** except we also need to know how to find a perpendicular slope. Remember that a perpendicular slope is found be taking the slope of the line that it's perpendicular to and negating it's reciprocal. So, if my slope was 2/3 and I wanted to find the perpendicular slope, I would flip my fraction (3/2) and negate it (-3/2). -3/2 is the slope of a line that's perpendicular to a slope of 2/3.	
5th Activity: Whole Group Instruction Students will recall how to solve geometric situations using algebra and geometric definitions. **<u>9 minutes</u>**	**16 and 17 on the next page** are difficult problems, but we know how to solve them. Let's work on #16. If we're going to solve number 16, we need to know how many degrees the interior angles of a triangle add up to be. Who knows how many degrees are in a triangle? (student response) Good, 180 degrees. They give us two interior angles, so we know a that "these two angles + the angle we're solving for = 180 degrees" So, (3x+2) + (5x+5) + "unknown angle" = 180 We also know that a line, by definition, contains 180 degrees. So, (2x+67) + "unknown angle" = 180. **I know this is a lot, but please try to stay with me. Are there any questions as of now?**	District Assessment Review

	(student response) **(answer any questions)** Now, because we have two equations that are equal to 180 degrees, they must be equal to each other. Therefore, **(3x+2) + (5x+5) + unknown angle = (2x+67) + unknown angle.** Now we can solve for our "x" by bringing all of our numbers to one side of the equation and isolating x by itself on the other side of our equation. Does everybody know how to finish the problem from this point? (student response) (If there are questions answer them).	
6th Activity: Whole Group Instruction Students will recall how to calculate the range of possible lengths for the third side of a triangle given the other two sides. **5 minutes**	**Now let's look at the very last question on the review.** If we are given two sides of a triangle, how can we calculate the length of the third side? We only practiced this for one day, does anyone remember how we calculated this? (student response) We know that the third side of the triangle has to be less than the sum of the other two sides. Additionally, the third side must be greater than the difference of the other two sides of the triangle. I now want everyone to write down this inequality below the table shown on #19: Difference of two sides < x < the sum of two sides	District Assessment Review

	In this situation, "x" is representing the possible length of the third side. Let's look at the first row of lengths which are "3, 7." If I have two sides of a triangle that have the length 3 and 7, how might I plug these into our inequality to find the possible lengths of our third side? (student response) The difference of 7-3 = 4 and the sum of 7+3 = 10. Therefore, our inequality looks like: $4 < x < 10$ Are there any questions? That is how you can always find the range of possible lengths for a third side of a triangle.	
CLOSURE **<u>1 minute</u>**	All of you need to take these reviews home tonight and study them. Come back tomorrow if you have any questions about the review. Also, I will be here during A-lunch and after school if necessary. Please come in for tutoring if you need any help at all. Good luck students!	(none)