**Transversal “Stand on the Angles” Lesson**

**Lesson Plan for Math Grade 8**

Teacher: Mr. Barker

School: PHG

Date: 2/28/2014

**Standard:** [ 8.M.G.05] I can use informal arguments to prove relationships with transversals.

**Estimated Duration**: *70 minutes*

**Lesson objective(s):**

Students will be able to recognize and name transversal angle relationships (e.g. alternate exterior, alternate interior, corresponding, co-interior/consecutive interior, supplementary, complementary, and vertical).

**Long-term and Short-Term Plans:**

Students need to know this material for the district benchmark test in March and for AIMs testing in April. I will give them post assessment the following day.

**Interdisciplinary Connections:**

Through the initial video, the teacher has incorporated real-world application video for transversals in urban planning and construction.

**Pre-Assessment:**

During the week previous to the lesson each student will work independently on the pre-Assessment for several minutes.

**Prior Lesson:**

This activity should follow a brief introduction (inquiry lesson, video or direct instruction) to transversal angle names and complement/supplementary/congruent angles.

**Preparation:**

Each student needs a white board (marker and eraser). Each student will be given a post-it at the beginning of class. Desks need to be arranged in pairs around the room. Use tape to make a diagram of a transversal with parallel lines and a pair of complementary angles on the ground. Have the ‘disagree and agree’ sentence stems posted on the wall. On the board it will say to find a partner and sit together in the room. Also on the board are examples of each type of angle relationship. Place a post-it note on each desk.

**Key Vocabulary (written on the board):**

alternate exterior

alternate interior

corresponding

co-interior/consecutive interior/same side interior

supplementary

complementary

vertical

**Lesson Overview:**

Bellwork (8 minutes)

Application video on the application of tranversals from youtube. (2 minutes)

Link: <http://www.youtube.com/watch?v=iMINKDZk-uM>

A review of the transversal angle relationship name writte on the on whiteboard. (5 minutes)

Activity (50 minutes):

The lesson provides kinesthetic/tactile experience as the students must stand on the correct angle relationship. A partnership will be chosen to stand on the angle relationship given by the teacher. The partnership that was on the diagram can choose the next partnership to stand on angles. Students should give themselves a point if they get a relationship correctly on their whiteboard.

After a pair stands on the angle relationships in the middle of the room, each student should draw an example of the angle relationship on their white boards—it could be the same or different from what the pair in the middle decided to do. After a few seconds, have each student raise their board. Teacher will make a quick assessment (have a clipboard in hand). Then tell the students to put their board down and compare/discuss with their partner.

Call on a random student (sticks with names on it) to share their answer after they have had a chance to compare with their partner. The teacher will call on one student to say out loud whether they agree or disagree with where the students are standing in the middle of the room—the student must use a complete sentence (using the sentence stems) about whether they agree or disagree where the students are standing. The teacher will confirm the answer given or give the correct answer if needed.

Ask after the first question: ‘Thumbs up if you could get a 100% on this test if I handed it out now. Thumbs down if not.” Repeat this same question at the end of class.

Potential Questions:

1. Stand on a pair of corresponding angles. (Allow time for the partnership to make a decision). To the rest of the class, do you agree or disagree with the partnership in the middle? Write a complete sentence using the sentence stems. (4 possible standing patterns)
2. Are these two angles complementary, supplementary or congruent?
3. If partner A’s angle measured 65 degrees, what would partner B’s angle measure?
4. To the partnership in the middle: Find another pair of corresponding angles.
5. Stand on a pair of alternate interior angles. (Allow time for the partnership to make a decision). To the rest of the class, do you agree or disagree with the partnership in the middle? Write a complete sentence using the sentence stems. (2 possible standing patterns)
6. Are these two angles complementary, supplementary or congruent?
7. If partner A’s angle measured 30 degrees, what would partner B’s angle measure?
8. To the partnership in the middle: Find the other pair of alternate interior angles.
9. Stand on a pair of vertical angles. (Allow time for the partnership to make a decision). To the rest of the class, do you agree or disagree with the partnership in the middle? Write a complete sentence using the sentence stems. (4 possible standing patterns)
10. If partner A’s angle measured 50 degrees, what would partner B’s angle measure?
11. Are these two angles complementary, supplementary or congruent?
12. Stand on a pair of alternate exterior angles. (Allow time for the partnership to make a decision). To the rest of the class, do you agree or disagree with the partnership in the middle? Write a complete sentence using the sentence stems. (2 possible standing patterns)
13. If partner A’s angle measured 30 degrees, what would partner B’s angle measure?
14. Are these two angles complementary, supplementary or congruent?
15. To the partnership in the middle: Find the other pair of alternate exterior angles.
16. Stand on a pair of consecutive or co-interior angles. (Allow time for the partnership to make a decision). To the rest of the class, do you agree or disagree with the partnership in the middle? Write a complete sentence using the sentence stems. (2 possible standing patterns)
17. If partner A’s angle measured 30 degrees, what would partner B’s angle measure?
18. Are these two angles complementary, supplementary or congruent?
19. To the partnership in the middle: Find another other pair of co-interior angles.
20. Stand on a pair of supplementary angles. (Allow time for the partnership to make a decision). To the rest of the class, do you agree or disagree with the partnership in the middle? Write a complete sentence using the sentence stems. (16 possible standing patterns)
21. If partner A’s angle measured 30 degrees, what would partner B’s angle measure?
22. What do supplementary angles add up to?
23. To the partnership in the middle: Find another other pair of supplementary angles.
24. Stand on a pair of complementary angles. (Allow time for the partnership to make a decision). To the rest of the class, do you agree or disagree with the partnership in the middle? Write a complete sentence using the sentence stems.
25. If partner A’s angle measured 30 degrees, what would partner B’s angle measure?
26. What do these angles add up to?

Closure (5 minutes):

On the front of the post-it note, ask students to write down something that they did not understand from the lesson today. If they understand everything, they should write down ‘nothing’. On the back of the post-it write something new that they learned today. Give it to the teacher on the way out the door.

**Formative Assessments:** thumbs up/down, verbal answers, white boards answers, post-it notes

**Subgroup Identification**

Observation is an effective method used by teachers to identify subgroups. In this case, the observation is done as students are asked to participate in the middle of the room and write examples on their whiteboards. The teacher will also ask a variety of questions that will help determine student understanding and skill. For example:

* How did you find that answer?
* Why do you think that?
* Are there other ways to get that answer?
* Does anyone have a different answer?

I will carry a clip board and make note of students who are struggling and who achieve competence as I survey the room. I have a few gifted students who may finish quickly and will be given other material in place of the planned activity such as plotting the class survey data.

**Differentiation strategies to meet diverse learner needs**

For students who achieve understanding (high subgroup), I may ask them to find all the angle relationship possibilities instead of just one. I may also have students complete an advanced worksheet if they are bored. I may have advanced students explain or sit by struggling students to peer teach.

Instruction is differentiated according to learner needs and may include the following. For the low sub-group, I may use the following strategies:

* Give hints to struggling students.
* Allow students to verbally explain angle relationships.

**Homework:**

Worksheet