1.8.4 Journal: Consecutive Angle Theorem

Journal

Geometry Sem 1

Points Possible: 20

Name:_____

Date:_____

Making the Slopes Safer for Skiers

Instructions:

- View the video found on page 1 of this journal activity.
- Using the information provided in the video, answer the questions below.
- Show your work for all calculations

1. The Students' Conjectures: (**3 points**: 1 point each)

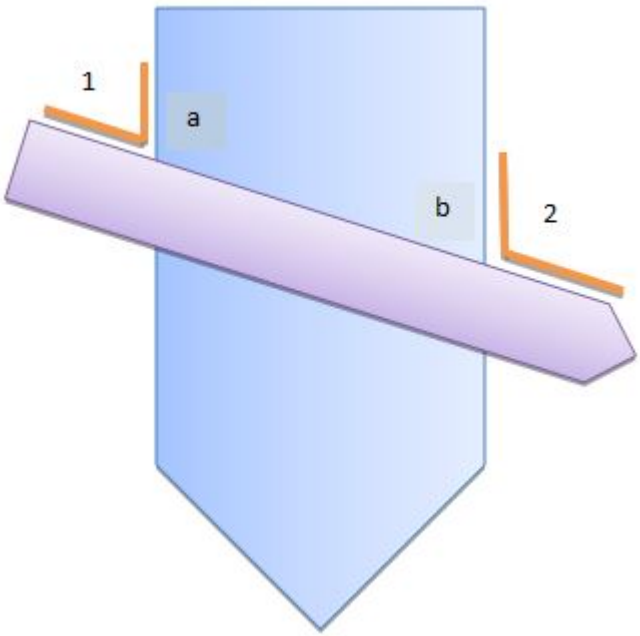
   a. What conjecture is being made?

   b. What key details are given?

   c. What is your plan of action?

2. Looking at the Consecutive Interior Angles (**9 points**)

Look at the diagram of the scenario below. A steep downhill ski slope is intersected at an angle by a less steep ski slope. Safety fences need to be set up in the locations shown. The angles of the fences, angles 1 and 2, can be determined by finding the relationship between the angles *a* and *b*.



a. Draw a geometric diagram of this scenario using two parallel lines and one transversal. (Remember that a transversal is a line which cuts across parallel lines.) Label the angles, parallel lines, and transversal as indicated in the diagram above. (2 points)

b. Starting with the fact that angles 1 and *a* are a linear pair and that angles *b* and 2 are also a linear pair, use a two column proof to prove that consecutive interior angles *a* and *b* are supplementary. (5 points)

Statement	Reason

c. Explain what the result of your proof tells you about angles *a* and *b*. Specifically, if you measured one angle, what would you know about the other? (2 points)

3. The Exterior Angles (**6 points**)

a. The fences will be aligned with the exterior angles ∠1 and ∠2. What are some other relationships you can see between ∠1, ∠2, ∠*a*, and ∠*b*? (2 points)

b. Which of the relationships you listed above will be the most helpful in figuring out the measurements of the safety fences? (2 points)

c. What is the measure of ∠2? (2 points)

4. Reflections (**2 points:** 1 point each)

a. Can you think of any other real-life scenarios where parallel lines and transversals exist?

b. What are the limitations of the ski slope scenario as a real-life example?