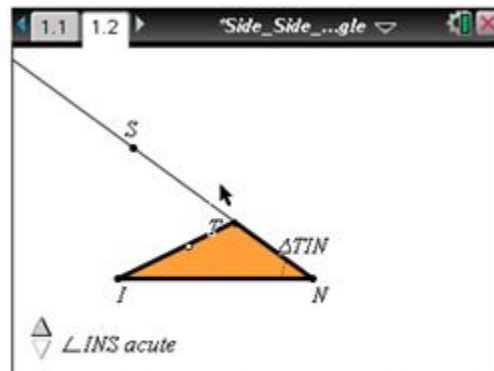


TI-Nspire - Geometry: Side-Side-Angle: The Ambiguous Case

Emily Beski



In this lesson students will investigate what triangle(s) can be created when two sides in a non-included angle are given.

This lesson involves manipulating the length of a side of a triangle and the non-included angle to identify the conditions that are necessary to determine a unique triangle. As a result students will:

- Be given two sides and the non-included angle, and they will change the size of the given angle to determine the conditions necessary to determine a triangle.
- Conclude that uniqueness is a necessary condition for the congruence of two triangles. (taken from TI website)

Grade Level: Grades 9-12

PSSM Content Standard: Geometry

CCSSM Content Standard: Geometry

Math Content: triangle, angle, congruence, Side-Angle-Side Congruence Theorem, Angle-Angle-Side Congruence Theorem

Evaluation

What is being learned? What mathematics is the focus of the activity/technology? Is relational or instrumental understanding emphasized?

- Students will identify the conditions necessary to determine a unique triangle when given two sides and a non-included angle (SSA).
- Students will justify why SSA is not sufficient to establish congruence of two triangles.
- Students will construct viable arguments and critique the reasoning of others (CCSS Mathematical Practice). (taken from TI-website)

An instrumental understanding is emphasized.

How does learning take place? What are the underlying assumptions (explicit or implicit) about the nature of learning?

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There is an explicit learning taking place.

What role does technology play? What advantages or disadvantages does the technology hold for this role? What unique contribution does the technology make in facilitating learning?

Technology allows students to see both triangles made when give two sides and a non-included angle. I've tried to explain this numerous times, even with specific side lengths on the smartboard, but the students couldn't physically see both triangles. This technology allows students to make the two triangles themselves which can help them determine that side-side-angle cannot prove congruence.

How does it fit within existing school curriculum? (e.g., is it intended to supplement or supplant existing curriculum? Is it intended to enhance the learning of something already central to the curriculum or some new set of understandings or competencies?)

I would use this to supplement existing curriculum. By the time students get to me in integrated math 3 (9th and 10th grade) they should have had a full geometry course or integrated math 2 (which encompasses a good amount of geometry). There are too many students that come in and know that you can you A-S-S when writing proofs, but that's about as far as their knowledge goes. The activity would remind students about congruence and why they can't use side-side-angle.

How does the technology fit or interact with the social context of learning? (e.g., Are computers used by individuals or groups? Does the technology/activity support collaboration or individual work? What sorts of interaction does the technology facilitate or hinder?)

This activity would be best if students could each individually have their own calculator or i-pad. Once students have worked on this activity they can debrief with a neighbor and make final conclusions.

How are important differences among learners taken into account?

This is a pretty basic activity, so there aren't any modifications made to it. Using the technology instead of just lecturing or describing is taking the differences amongst learners into account.

What do teachers and learners need to know? What demands are placed on teachers and other "users"? What knowledge is needed? What knowledge supports does the innovation provide (e.g., skills in using particular kinds of technology)?

The only thing that students need to know is how to open a ti-Nspire document and drag and drop a point. This will make the triangles for them. This is a great activity to teach students about the Ambiguous case, however, it does not help them in developing any new type of technology skill.