GRADE 11:

Benchmark A: Geometry and Spatial Sense

Transformations and Symmetry

4. Use trigonometric relationships to determine lengths and angle measures; i.e., The Law of Sines and Law of Cosines

PROCEDURE:

In discussion before viewing *Architecture: Math*, the teacher may consider engaging students in discussion on any of the following topics:

- Architects rely heavily on skills from the STEM disciplines. Specifically ones students are studying in high school now.
- Trigonometry is used daily in the field of architecture.
- Architects apply the math concepts they have learned in order to make safe buildings.

In discussion after viewing Architecture: Math, the teacher may have a follow-up discussion on the same topics discussed before viewing the video.

BEFORE VIEWING:

Have each student complete the "Before Viewing" column on the Agree-Disagree Chart.

WHILE VIEWING:

Students make notes about their impressions of how trigonometry is used by architects to design buildings and ensure their safety.

AFTER VIEWING:

Have students complete the "After Viewing" column on the Agree-Disagree Chart. Discuss the changes in their answers.

DIRECTIONS:

Mark whether you agree or disagree with each statement in the left column before viewing the video. After viewing the video, identify whether you agree or disagree with each statement in the right column. Discuss each statement as a group.

Before Viewing	Statement	After Viewing
Agree Disagree	Math, specifically trigonometry is important to the field of architecture.	Agree Disagree
Agree Disagree	In the field of architecture, arts disciplines and creativity are equally important as math and science.	Agree Disagree
Agree Disagree	Architects start with a concept or design and then turn to math and science to support their concept.	Agree Disagree

PROCEDURE:

Distribute the pre and post-viewing guide on the following page to provide focused viewing for students while watching the *STEM Career Lab* video, *Architecture: Math*.

Before viewing the video, instruct students to read and respond to the "What I Already Know" column of the *Architecture: Math Viewing Guide*. Let students know it's okay if they do not know all of the answers. Play the *Architecture Math* video and instruct students to now fill out the "What I Learned" column. After playing the video, use the guide to facilitate a post-viewing discussion with students.

1. They are used to find the unknown angles and side lengths in triangles.
2. The Law of Sines is used to calculate an unknown angle in a triangle.
3. The Law of Cosines is used to calculate an unknown side length in a triangle.
4. Architects begin a project with conceptual ideas and designs.
5. Knowledge of trigonometry is critical in the field of architecture.
6. Drawing courses are also helpful when pursuing a career in architecture.

	What I Already Know	What I Learned
1. How are the Laws of Sines and Cosines used?		
2. What unknown is the Law of Sines used to find?		
3. What unknown is the Law of Cosines used to find?		
4. How do architects begin a project?		
5. How critical is math, specifically trigonometry to the field of architecture.		
6. What other courses are helpful when pursuing a career in architecture?		