



Professional Development Webinars

IB® Math Curriculum Topic 3: Geometry and Trigonometry



education.ti.com/tiwebinars



Professional Development Webinars

Aug 01	IB® Are You Ready for the Math Curriculum Changes?
Aug 22	IB® Math Curriculum Topic 1: Number and Algebra
Sep 26	IB® Math Curriculum Topic 2: Functions
Oct 24	IB® Math Curriculum Topic 3: Geometry and Trigonometry
Dec 05	Improving Students' IB® Mathematical Explorations
Jan 30	IB® Math Curriculum Topic 4: Statistics and Probability
Feb 27	IB® Math Curriculum Topic 5: Calculus

All webinars begin at 7pm (Central)

education.ti.com/tiwebinars

Tonight's *Presenter*



Daniel Wilkie

T³ Regional Instructor

Pelzer, SC

Daniel has taught every level of high school math (including IB and AP) for 24 years in Texas, New York, Virginia, and now South Carolina. He is currently teaching Math at Christ Church Episcopal School in Greenville, South Carolina. Daniel has been married to his loving wife Amanda for 16 years. They have 3 awesome children: Cameron (10), Alex (7), and Kevin (4). Other than loving his family, Daniel enjoys educating teachers on all things TI and acting in local theater productions.

“Geometry and Trigonometry” is Topic 3 in both of the new IB® math courses, “Applications and Interpretation” and “Analysis and Approaches.” The webinar focuses on the changes to Geometry and Trigonometry within the new courses and will help prepare you with resources to teach this topic.

TI products have been developed independently from and are not endorsed by the International Baccalaureate Organization. IB is a registered trademark owned by the International Baccalaureate Organization. Policies subject to change. Visit www.ibo.org.

In this webinar the presenter will:

- Provide an overview of the Geometry and Trigonometry subtopics in all four IB® math courses
- Highlight ready-to-use lessons available on the Texas Instruments IB® Resources website for this topic
- Demonstrate a Geometry and Trigonometry sample activity using TI-84 Plus CE and TI-Nspire™ CX II graphing calculators

Presenter: Daniel Wilkie

TI products have been developed independently from and are not endorsed by the International Baccalaureate Organization. IB is a registered trademark owned by the International Baccalaureate Organization. Policies subject to change. Visit www.ibo.org.



Law of Sines and Cosines

Overview

Students explore the proofs of the Laws of Sine and Cosine, investigate various cases where they are utilized, and apply them to solve problems.

Key Steps

Step 1

Problem 1 gives students the opportunity to review the Law of Sines and Cosine. They are also asked to recall from Geometry what SAS, ASA, SAA, SAS, SSS, and SSA mean and which one does not always work. In Problem 2, students prove the Law of Sine. The proof involves using right triangle trigonometry.

Step 2

Students use the **Calculate** tool to determine the length of a side or measurement of an angle for the various cases. In each case, students will verify the calculations using the **Length** or **Angle** tool.

Step 3

Students are given an opportunity to explore real world applications of the Law of Sine and the Law of Cosine. They can solve the problems using the Text and Calculate tools directly on the TI-Nspire document.



Proof of Identities

This lesson involves discovering, visualizing, and proving trigonometric identities.

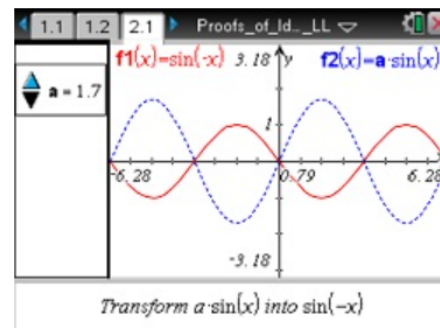
Planning and Resources

Objectives

- » Students will be able to interpret reciprocal, negative angle, cofunction, and Pythagorean identities in terms of the graphs of the trigonometric functions involved.
- » Students will be able to prove trigonometric identities algebraically.
- » Students will be able to visualize trigonometric identities graphically.

Vocabulary

- » Cofunction Identities
- » Identity
- » Negative Angle Identities
- » Pythagorean Identities
- » Reciprocal Identities
- » Trigonometric Identities





Find That Sine

Activity Overview

Sinusoidal regression is used to determine equations to model various data sets and the equations are used to make inferences.

L1	L2	L3	L4	L5	1
1	25.7	1	9.21	0	
2	31.2	16	9.46	3	
3	42.7	32	9.92	6	
4	54.5	47	10.48	9	
5	64.1	60	11.02	12	
6	73.2	75	11.68	15	
7	78.5	91	12.41	18	
8	76.1	106	13.07	-----	
9	67.5	121	13.68		
10	56.6	136	14.21		
11	43.1	152	14.63		

L1(1)=1

Key Steps

L1	L2	L3	L4	L5	1
1	25.7	1	9.21	0	
2	31.2	16	9.46	3	
3	42.7	32	9.92	6	
4	54.5	47	10.48	9	
5	64.1	60	11.02	12	
6	73.2	75	11.68	15	
7	78.5	91	12.41	18	
8	76.1	106	13.07	-----	
9	67.5	121	13.68		
10	56.6	136	14.21		
11	43.1	152	14.63		

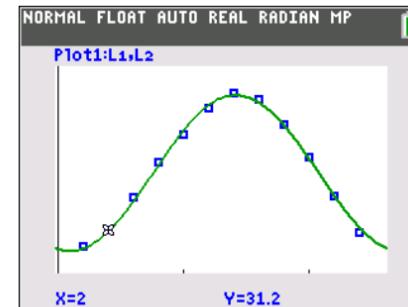
L1(1)=1

NORMAL FLOAT AUTO REAL RADIAN MP

SinReg

$$y = a \sin(bx + c) + d$$

$a = 26.7502224$
 $b = 0.4764967356$
 $c = -1.79869635$
 $d = 51.09629231$



Step 1

Students explore sinusoidal regression by determining and graphing the sine regression equation.

Students will use the program KANSTEMP which will load six lists with data for all three problems.

Step 2

They use data for the average monthly temperature for Kansas City to determine the sine equation that models the data.

Students produce a scatter plot with the data given to them in their spreadsheet and find the sine equation that models the data.

Step 3

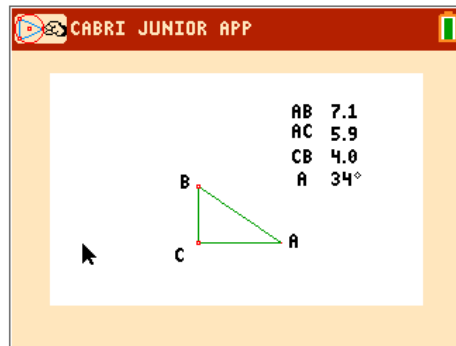
In Problem 2, students will then find the minimum and maximum points on the curve for four dates. These points will represent the summer and winter solstices.



Trig Ratios

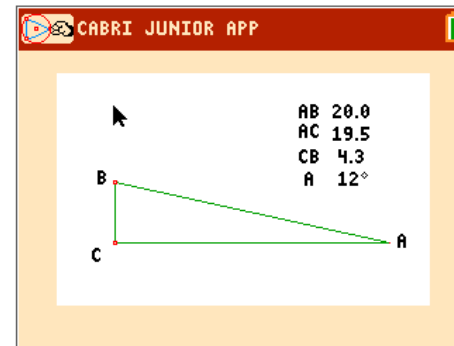
Students will use Cabri™ Jr. to discover the relationship between the trigonometric functions: sine, cosine and tangent and the side length ratios of a right triangle.

Key Steps



Step 1

Students use Cabri™ Jr. to find the relationships between ratios of the side lengths and the trigonometric functions. They find the sine, cosine, and tangent of an angle then find the ratio between the hypotenuse, adjacent and opposite sides.



Step 2

Students then form a hypothesis about the relationships they observe between the trigonometric values and the side lengths.



International Conference

SUPERCHARGE YOUR TEACHING



2020 T³™ INTERNATIONAL CONFERENCE | MARCH 13–15, 2020 | DALLAS, TEXAS

Join us in Dallas and explore new ways to motivate students by using TI technology as tools for real-world inquiry and discovery.

One lucky webinar participant wins free registration. (See drawing [rules](#).)

And
the
winner
is ...

Upcoming Webinars & Survey



Register for upcoming webinars:

education.ti.com/tiwebinars

Survey

After the webinar, a brief survey will automatically appear in your web browser. We greatly appreciate your feedback.

Stay Connected with TI



[Facebook.com/TICalculators](https://www.facebook.com/TICalculators)



[Twitter.com/TICalculators](https://twitter.com/TICalculators)



[Instagram.com/TICalculators](https://www.instagram.com/TICalculators)



[Youtube.com/TICalculators](https://www.youtube.com/TICalculators)



[Pinterest.com/TICalculators](https://www.pinterest.com/TICalculators)



Post-webinar Follow-up

Find useful resources, answers to your questions & access to friendly, knowledgeable customer support and technical reps.

General Questions:

1-800-TI-CARES

Technical Questions:

972-917-8324

ti-cares@ti.com



For a consultation on an upcoming purchase of TI Technology or professional development, please contact us at:

ti-educators@ti.com



**Join us for the next IB® webinar from
TI / T³ Professional Development—**

**Improving Students' IB®
Mathematical Explorations**

**Thursday, December 5
7pm (Central)**

education.ti.com/tiwebinars

Thank you!

education.ti.com