

Geometry B Live Lesson Class

U3L5 – Law of Sines and Law of Cosines



Agenda



1. Review topics and problems from Unit 3, Lesson 5.

2. Use the 2-column note system to take better notes in math class. Bring your math notebook and pen or pencil to each math LiveLesson class.

2-Column Notes Template



1. Announcements/To Do's
2. School-Wide Learner Outcomes
3. LL Objectives
4. Vocabulary words
5. Problems
6. Summary (End of class)

1. Write down important details.
2. What are you going to work on this week?
- 3.
4. Definitions (fill in as we go)
5. Steps to solving problems
6. 1 or 2 sentences about the LL class.

Reminders and To – Do's



Information

1. Complete 1 math lesson per day.
2. Check your WebMail every day
3. Be prepared to spend 4 - 6 hours per day on schoolwork.
4. Remind your Learning Coach to take daily attendance

What to do

1. Go to your Planner in Connexus to find the math lesson for the day
2. Go to Connexus to find WebMail
3. Complete lessons for the day from your Planner. Do not get behind on lessons.
4. Have your Learning Coach log into Connexus daily.

Reminders and To – Do's



Information

5. Go to the Message Board first for information about our math class.

6. Contact Mr. Elizondo for math questions.

Remember: You need at least 2 phone calls with Mr. Elizondo per semester.

What to do

6. Call (559) 549 - 3244 and leave a voicemail if call is not answered.

Make an appointment at:
<https://elizondo.youcanbook.me>

Send a WebMail

U3L5 – Objectives



- Use the Law of Sines
- Use the Law of Cosines in finding the measures of sides and angles of a triangle

Note: There is no lesson in the textbook. This topic is covered on the “Concept Byte” on pages 522-523. You can also use the ‘worksheets’ and Khan Academy videos in the Connexus lesson.

U3L5 – Vocabulary Words



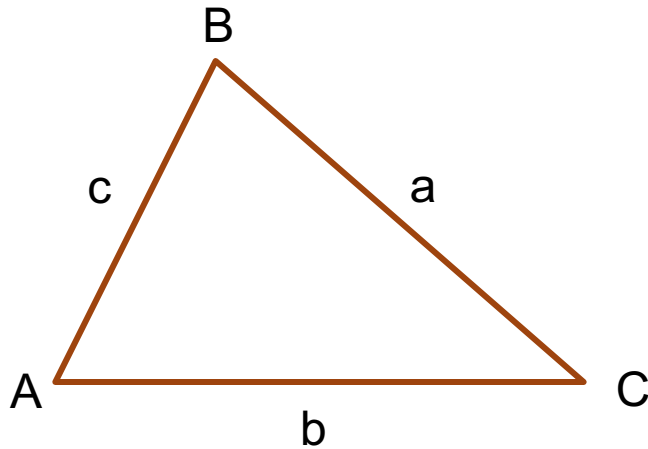
- Law of Cosines
- Law of Sines

U3L5 – Law of Sines and Law of Cosines



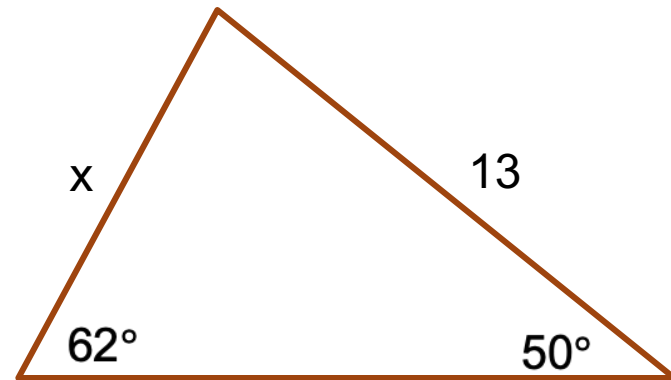
- Law of Sines

Use for non-right triangles



$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

Find the value of x. Round to the nearest tenth.



$$\frac{\sin 50}{x} = \frac{\sin 62}{13}$$

$$13 \cdot \sin 50 = x \cdot \sin 62$$

$$13 \cdot \sin 50 = x \cdot \sin 62$$

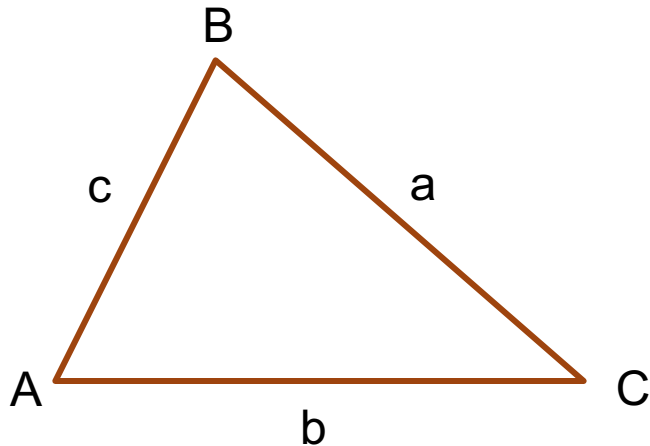
$$x = \frac{13 \cdot \sin 50}{\sin 62} = \mathbf{11.28}$$

U3L5 – Law of Sines and Law of Cosines



- Law of Cosines

Use for non-right triangles

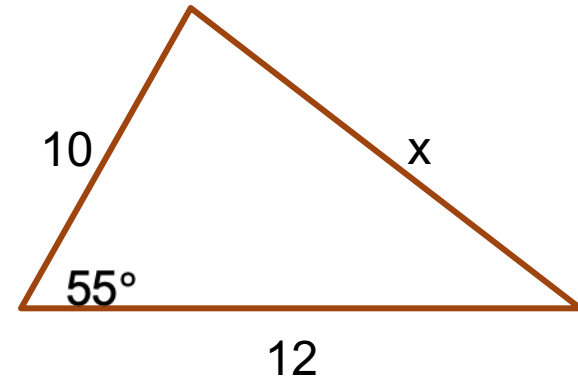


$$a^2 = b^2 + c^2 - 2bc \cdot \cos A$$

$$b^2 = a^2 + c^2 - 2ac \cdot \cos B$$

$$c^2 = a^2 + b^2 - 2ab \cdot \cos C$$

Find the value of x . Round to the nearest tenth.



$$x^2 = 12^2 + 10^2 - 2(10)(12) \cdot \cos 55$$

$$x^2 = 144 + 100 - 137.7$$

$$x^2 = 106.3$$

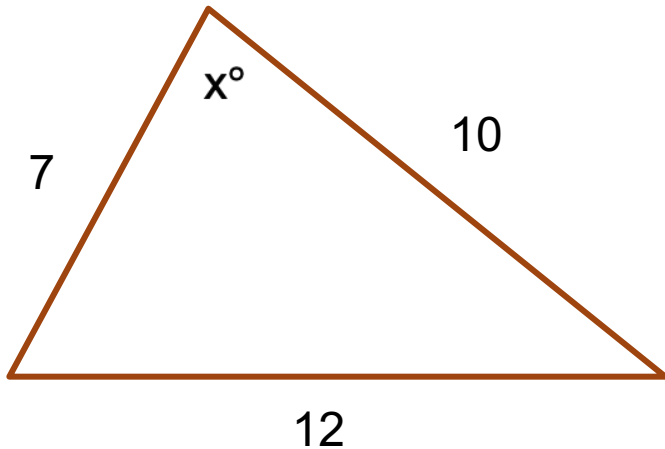
$$\mathbf{x = 10.3}$$

U3L5 – Law of Sines and Law of Cosines



- Determining which one to use
 - Depends on what is given
- Tip: Try law of sines first

Find the value of x . Round to the nearest tenth.



$$12^2 = 7^2 + 10^2 - 2(7)(10) \cdot \cos x$$

$$144 = 49 + 100 - 140 \cdot \cos x$$

$$144 = 149 - 140 \cdot \cos x$$

$$144 - 149 = 149 - 149 - 140 \cdot \cos x$$

$$-5 = -140 \cdot \cos x$$

$$\frac{-5}{-140} = \cos x$$

$$\cos x = 0.03571429$$

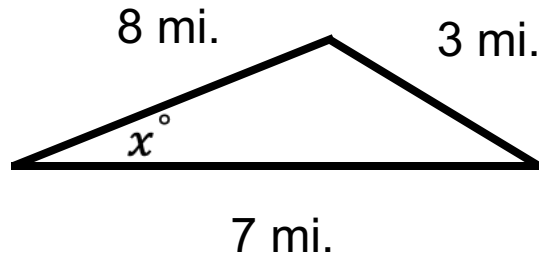
$$x = \cos^{-1}(0.03571429)$$

$$\mathbf{x = 87.9}$$

U3L5 – Law of Sines and Law of Cosines



You walk for 7 miles west. Then you change directions for 8 miles and end up 3 miles from your original position. To the nearest tenth of a degree, how many degrees did you turn when you changed direction?



$$3^2 = 8^2 + 7^2 - 2(8)(7) \cdot \cos x$$

$$9 = 64 + 49 - 112 \cdot \cos x$$

$$9 = 113 - 112 \cdot \cos x$$

$$9 - 113 = 113 - 113 - 112 \cdot \cos x$$

$$-104 = -112 \cdot \cos x$$

$$\frac{-104}{-112} = \cos x$$

$$\cos x = 0.92857143$$

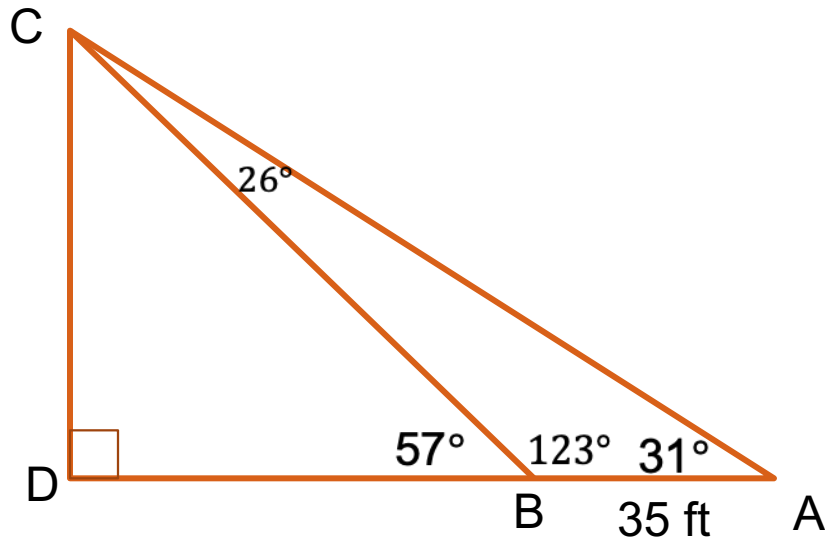
$$x = \cos^{-1}(0.92857143)$$

$$\mathbf{x = 21.8}$$

U3L5 – Law of Sines and Law of Cosines



There are two boats located at A and B. The top of the lighthouse is located at C. The distance between the two boats is 35 feet, and the angles of elevation are given. Find the distance from boat B to the top of the lighthouse.



$$\angle CBA = 123^\circ$$

$$\angle BCA = 26^\circ$$

$$\frac{\sin 26^\circ}{35} = \frac{\sin 31^\circ}{CB}$$

$$CB(\sin 26^\circ) = 35(\sin 31^\circ)$$

$$CB = \frac{35(\sin 31^\circ)}{\sin 26^\circ} = \mathbf{41.12ft}$$

Questions?



- Check the Message Board first
- Send a WebMail
- You can also make an appointment at <https://elizondo.youcanbook.me>
- You can also call me at (559) 549-3244. If I'm not available to answer your call, please leave a voicemail with your full name and phone number.