Geometry B Live Lesson Class

U3L3 – Trigonometry
(Ch. 8-3 in textbook)

CONNECTIONS ACADEMY®

Agenda

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

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	1. Write down important details.
2. School-Wide Learner Outcomes	2. What are you going to work on this week?
3. LL Objectives	
4. Vocabulary words	4. Definitions (fill in as we go)
5. Problems	5. Steps to solving problems
6. Summary (End of class)	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

What to do

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.

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

U3L3 – California Common Core State Standards

- HSG-SRT.C.6: Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.

- HSG-SRT.C.7: Explain and use the relationship between the sine and cosine of complementary angles.

- HSG-SRT.C.8: Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

- HSG-MG.A.1: Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).

U3L3 – Objectives

Use the sine, cosine, and tangent ratios to determine side lengths and angle measures in right triangles

U3L3 – Vocabulary Words

- cosine
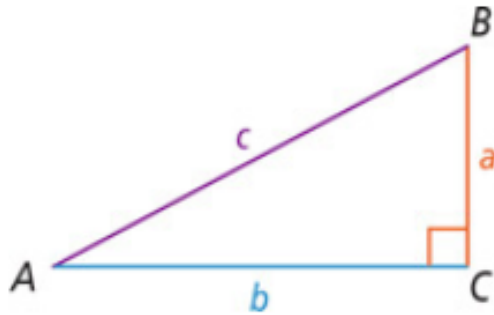
- sine

- tangent

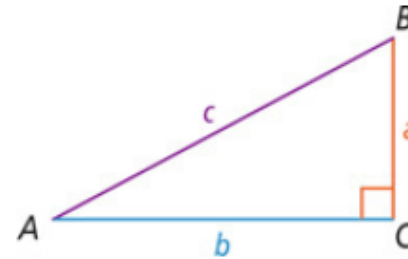- trigonometric ratios

U3L3 – Trigonometry

- Trigonometric Ratios

  Similar right triangles have equivalent ratios for their corresponding sides.

  SOH CAH TOA
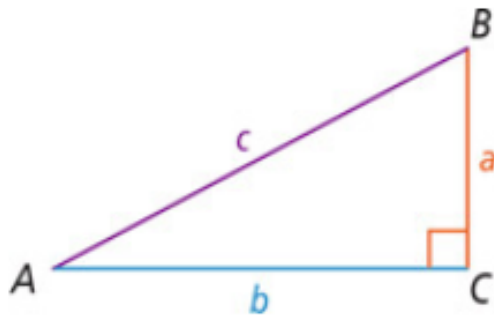
Sine - **O**pposite over **H**ypotenuse
Cosine – **A**djacent over **H**ypotenuse
Tangent – **O**pposite over **A**djacent

$$Sin\ A = \frac{a}{c} \qquad Sin\ B = \frac{b}{c}$$

$$Cos\ A = \frac{b}{c} \qquad Cos\ B = \frac{a}{c}$$

$$Tan\ A = \frac{a}{b} \qquad Tan\ A = \frac{b}{a}$$

U3L3 – Trigonometry

- Trigonometric Ratios

Similar right triangles have equivalent ratios for their corresponding sides.

SOH CAH TOA

Sine - **O**pposite over **H**ypotenuse
Cosine – **A**djacent over **H**ypotenuse
Tangent – **O**pposite over **A**djacent

Write the ratios for Sin x, Cos x, and Tan x

$$Sin\ x = \frac{12}{13}$$

$$Cos\ x = \frac{5}{13}$$
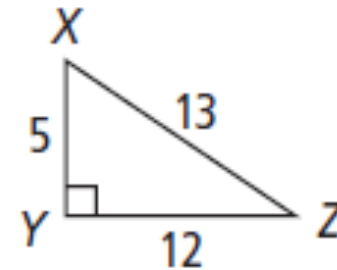
$$Tan\ x = \frac{12}{5}$$

U3L3 – Note: Using the Calculator

- Make sure your calculator is in DEG mode

- Be careful with parenthesis

- Be careful of the order

Try these and make sure you get the same answers in your calculator!

$$Sin\ 40° = \quad 0.64278$$

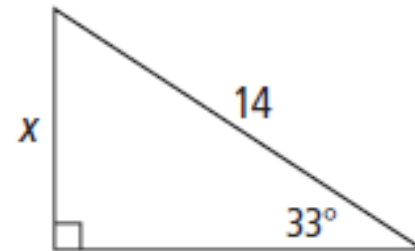$$Cos\ 40° = \quad 0.76604$$
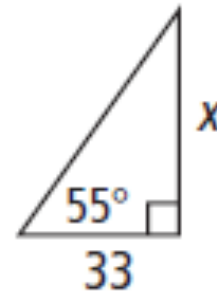
$$Tan\ 40° = \quad 0.83909$$

U3L3 – Indirect Measurement

You can use trig ratios to find missing lengths.

Hint: Use what is given. Label the sides with O, A, or H.

Find the value of the variable.

$$Sin\ A = \frac{Opp}{Hyp}$$

$$Sin\ 33° = \frac{x}{14}$$

$$x = 14 \cdot Sin\ 33°$$
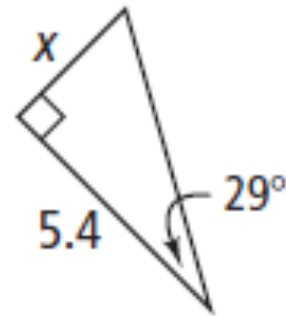
$$\boldsymbol{x \approx 7.62}$$

U3L3 – Indirect Measurement

You can use trig ratios to find missing lengths.

Hint: Use what is given. Label the sides with O, A, or H.

Find the value of the variable.

$$Tan\ A = \frac{Opp}{Adj}$$

$$Tan\ 55° = \frac{x}{33}$$

$$x = 33 \cdot Tan\ 55°$$

$$x \approx 47.13$$

U3L3 – Indirect Measurement

You can use trig ratios to find missing lengths.

Hint: Use what is given. Label the sides with O, A, or H.

Find the value of the variable.

$$Tan\ A = \frac{Opp}{Adj}$$

$$Tan\ 29° = \frac{x}{5.4}$$

$$x = 5.4 \cdot Tan\ 29°$$
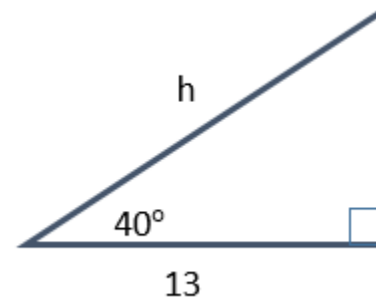
$$\boldsymbol{x \approx 2.99}$$

U3L3 – Indirect Measurement

You can use trig ratios to find missing lengths.

Hint: Use what is given. Label the sides with O, A, or H.

Find the value of the variable.

$$Cos\ A = \frac{Adj}{Hyp}$$

$$Cos\ 40° = \frac{13}{h}$$

$$h = \frac{13}{Cos\ 40}$$
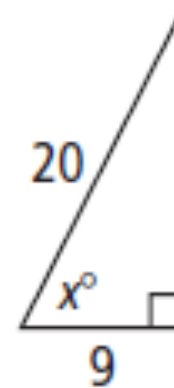
$$x \approx 16.97$$

U3L3 – Finding Missing Angles

After writing trig equations, you can use inverse trig functions to find the measure of the angle.

Find the value of x.

$$Cos\ A = \frac{Adj}{Hyp}$$

$$x° = Cos^{-1}(0.45)$$

$$Cos\ x° = \frac{9}{20}$$

| 0.45 | 2nd | cos | = |

$$Cos\ x° = 0.45$$
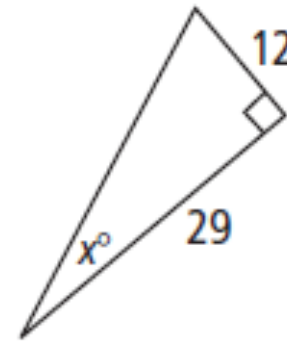
$$\boldsymbol{x \approx 26.74°}$$

U3L3 – Finding Missing Angles

After writing trig equations, you can use inverse trig functions to find the measure of the angle.

Find the value of x.

$$Tan\ A = \frac{Opp}{Adj}$$

$$x° = Tan^{-1}(0.4137)$$

$$Tan\ x° = \frac{12}{29}$$

| 0.4137 | 2nd | tan | = |

$$Tan\ x° = 0.4137$$

$$x \approx 22.47°$$

U3L3 – Things to know for quiz

- Use the Pythagorean Theorem to find missing lengths

- Classify triangles as acute, right, or obtuse

- Use properties of special right triangles

- Find missing angles using inverse trig functions

- Write trig ratios

- Using trig functions to find missing lengths

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.