Geometry B Live Lesson Class

U5L5 – Trigonometry and Area

(Ch 10-5 in textbook)

Agenda

1. Review topics and problems from Unit 5, Lesson 5 – Trigonometry and Area.

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	What to do
1. Complete 1 math lesson per day.	1. Go to your Planner in Connexus to find the math lesson for the day
2. Check your WebMail every day	2. Go to Connexus to find WebMail
3. Be prepared to spend 4 - 6 hours per day on schoolwork.	3. Complete lessons for the day from your Planner. Do not get behind on lessons.
4. Remind your Learning Coach to take daily attendance	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

U5L5 – California Common Core State Standards

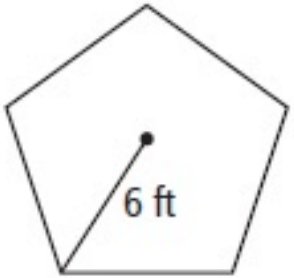
- HSG-MG.A.1: Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
- HSG-SRT.D.9: Derive the formula A = 1/2 ab sin(C) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.

U5L5 – Objectives

- Find the areas of regular polygons and triangles using trigonometry

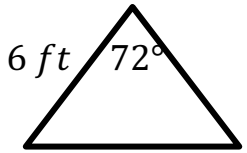
U5L5 – Trigonometry and Area

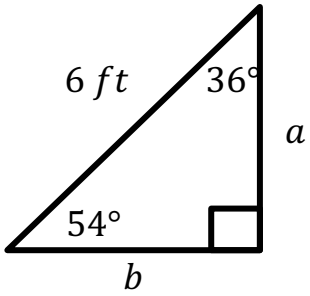
Find the area of the regular polygon.



Each angle in the pentagon:

$\frac{360}{5} = 72°$





1. Find the apothem, ***a***.
2. Find the ***b***, the other length of the triangle, the double it to find the length of a side of the regular polygon
3. Find the perimeter of the figure, ***P***.
4. Find the area. Use: $A = \frac{1}{2}aP$

$\cos 36° = \frac{a}{6}$

$a = 6 \cdot \cos 36°$

$\boldsymbol{a = 4.85}$

$\cos 54° = \frac{b}{6}$

$b = 6 \cdot \cos 54°$

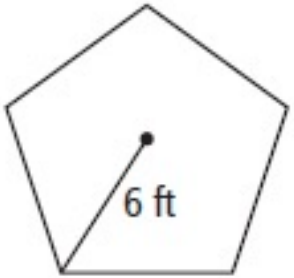
$b = 3.53$

$side\ length = 2b$

$\boldsymbol{= 7.05}$

U5L5 – Trigonometry and Area

Find the area of the regular polygon.



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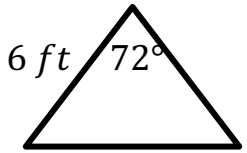

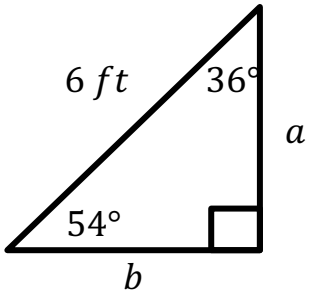

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3. Find the perimeter of the figure, ***P***.
4. Find the area. Use: $A = \frac{1}{2}aP$

$\boldsymbol{a = 4.85}$

$\boldsymbol{P} = 5 \cdot 7.05 =$ **35.27**

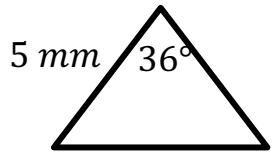
$\boldsymbol{A} = \frac{1}{2}(4.85)(35.27) = \boldsymbol{85.53\ ft^2}$

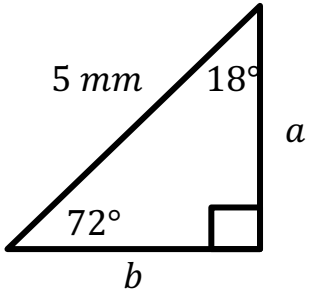
U5L5 – Trigonometry and Area

Find the area of the regular decagon with radius 5 mm.

Each angle in the decagon:

$$\frac{360}{10} = 36°$$





1. Find the apothem, ***a***.
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4. Find the area. Use: $A = \frac{1}{2}aP$

$$\cos 18° = \frac{a}{5}$$

$$a = 5 \cdot \cos 18°$$

$$\boldsymbol{a = 4.76}$$

$$\cos 72° = \frac{b}{5}$$

$$b = 5 \cdot \cos 72°$$

$$b = 1.55$$

$$side\ length = 2b$$

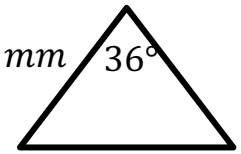
$$\boldsymbol{= 3.10}$$

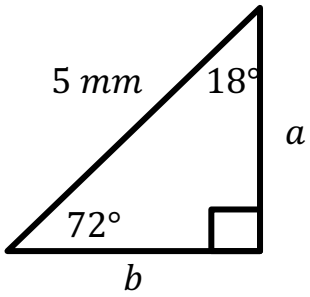
U5L5 – Trigonometry and Area

Find the area of the regular decagon with radius 5 mm.

Each angle in the decagon:

$$\frac{360}{10} = 36°$$





1. Find the apothem, ***a***.
2. Find the ***b***, the other length of the triangle, the double it to find the length of a side of the regular polygon
3. Find the perimeter of the figure, ***P***.
4. Find the area. Use: $A = \frac{1}{2}aP$

$\boldsymbol{a = 4.76}$

$\boldsymbol{P} = 10 \cdot 3.1 = \mathbf{31}$

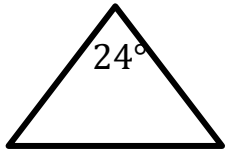
$\boldsymbol{A} = \frac{1}{2}(4.76)(31) = \mathbf{73.78\ mm^2}$

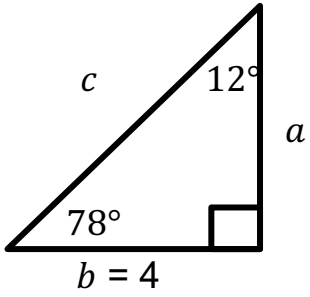
U5L5 – Trigonometry and Area

Find the area of the regular 15-gon with perimeter 120 ft.

Each angle in the decagon:

$\frac{360}{15} = 24°$





Perimeter $= 120$. *Each side is* 8. $\boldsymbol{b = 4}$

1. Find the apothem, ***a***.
2. Find the area. Use: $A = \frac{1}{2}aP$

$tan\ 12° = \frac{4}{a}$

$a = \frac{4}{\tan 12°}$

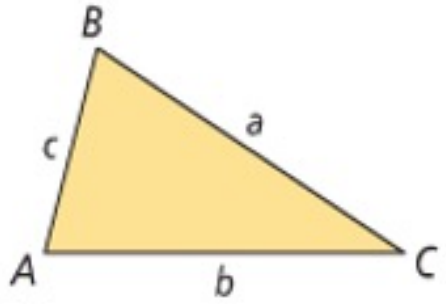
$\boldsymbol{a = 18.82}$

$A = \frac{1}{2}(18.82)(120)$

$\boldsymbol{A = 1,129.2\ ft^2}$

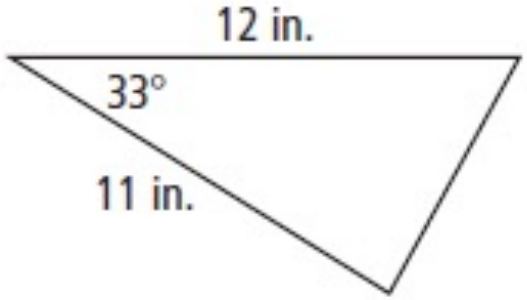
U5L5 – Area of a Triangle Given SAS

(Theorem 10-8)



$$\text{Area of } \triangle ABC = \frac{1}{2}bc(\sin A)$$

Find the area of the triangle.



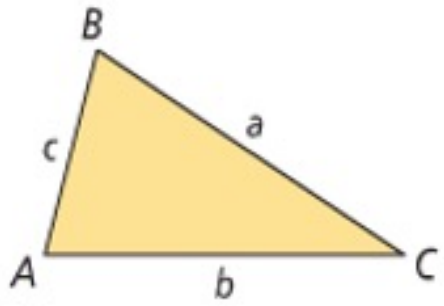
$$A = \frac{1}{2}(11)(12)(\sin 33°)$$

$$A = \frac{1}{2}(11)(12)(0.5446)$$

$$\boldsymbol{A = 35.95\ in.^2}$$

U5L5 – Area of a Triangle Given SAS

(Theorem 10-8)



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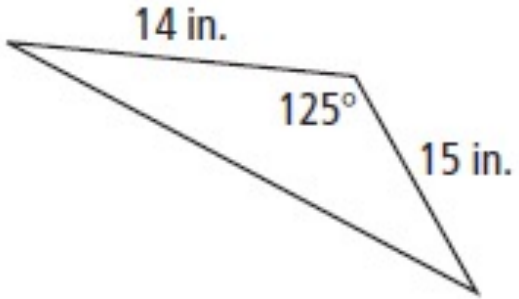

$$A = \frac{1}{2}(14)(15)(\sin 125°)$$

$$A = \frac{1}{2}(14)(15)(0.819)$$

$$\boldsymbol{A = 86.01\ in.^2}$$

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.