

# Geometry B Live Lesson Class

## U5L7 – Areas of Circles and Sectors

(Ch 10-6 in textbook)



# Agenda



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1. Review topics and problems from Unit 5, Lesson 7 – Areas of Circles and Sectors

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

## U5L7 – California Common Core State Standards

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- HSG-C.A.1: Prove that all circles are similar.
- HSG-C.B.5: Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

# U5L7 – Objectives



- Find the areas of circles, sectors, and segments of circles

# U5L7 – Vocabulary



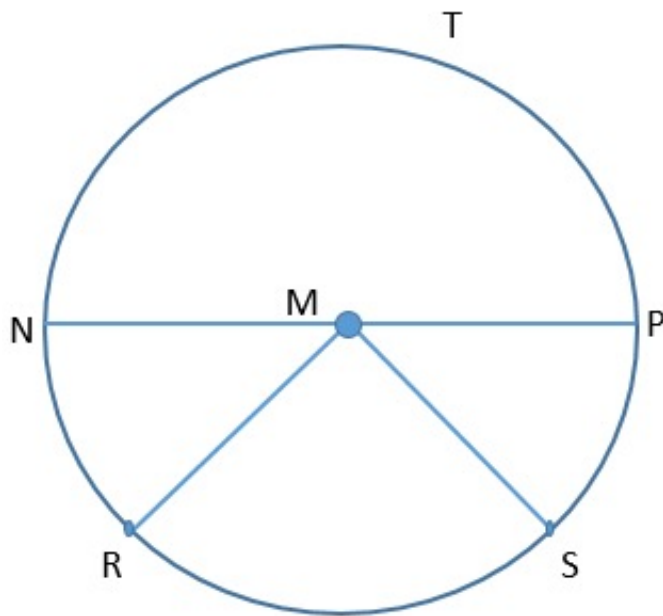
- adjacent arcs
- center
- central angle
- circle
- circumference
- concentric circles
- congruent arcs
- congruent circles
- diameter
- major arc
- minor arc
- pi
- radius
- Semicircle
- sector of a circle
- segment of a circle



# U5L7 – Circles and Arcs



## Parts of a Circle



Fill in the blanks.

M is the center of the circle

$\overline{MR}$  is a radius of the circle.

$\widehat{NR}$  is a minor arc.

$\widehat{RTS}$  is a major arc.

$\widehat{NTP}$  is a semicircle.

$\angle RMS$  is known as a central angle because its vertex is the center of the circle.

The region formed by  $\overline{MR}$  and  $\overline{MS}$  and  $\widehat{RS}$  is known as a sector.

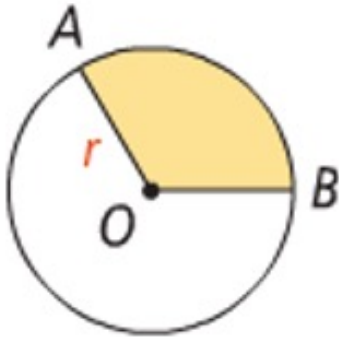
# U5L7 – Area of a Sector



Formula for area of a circle

$$A = \pi r^2$$

Area of a sector



$$A = \frac{\widehat{AB}}{360} \cdot \pi r^2$$

A circle has a diameter of 8 in. What is the area of a sector bounded by a  $40^\circ$  minor arc? Leave your answers in terms of  $\pi$ .

$$r = 4 \text{ in.}$$

$$A = \frac{40}{360} \cdot \pi (4 \text{ in})^2$$

$$A = \frac{1}{9} \cdot 16\pi \text{ in}^2$$

$$A = \frac{16}{9} \pi \text{ in}^2$$

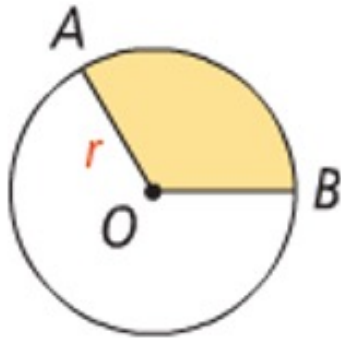
# U5L7 – Area of a Sector



Formula for area of a circle

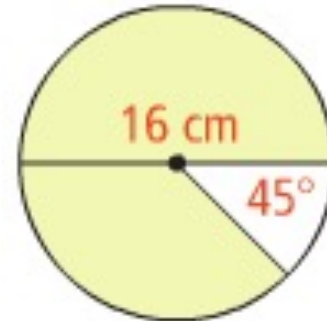
$$A = \pi r^2$$

Area of a sector



$$A = \frac{\widehat{AB}}{360} \cdot \pi r^2$$

Find the area of the shaded sector.



$$r = 8 \text{ cm.}$$

$$A = \frac{315}{360} \cdot \pi (8 \text{ cm})^2$$

$$A = \frac{7}{8} \cdot 64\pi \text{ cm}^2$$

$$A = 175.84 \text{ cm}^2$$

# U5L7 – Area of a Segment

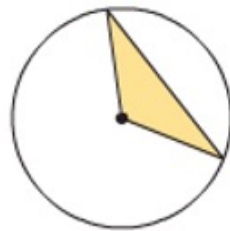


How to find the Area of a Segment



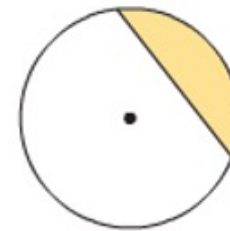
Area of sector

–



Area of triangle

=



Area of segment

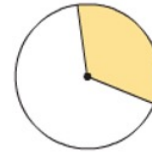
$$\frac{\widehat{AB}}{360} \cdot \pi r^2 - \frac{1}{2}bh = \text{Area of segment}$$

# U5L7 – Area of a Segment



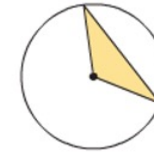
How to find the Area of a Segment

$$\frac{\widehat{AB}}{360} \cdot \pi r^2 - \frac{1}{2}bh = \text{Area of segment}$$



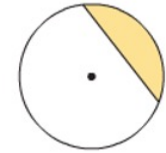
Area of sector

–



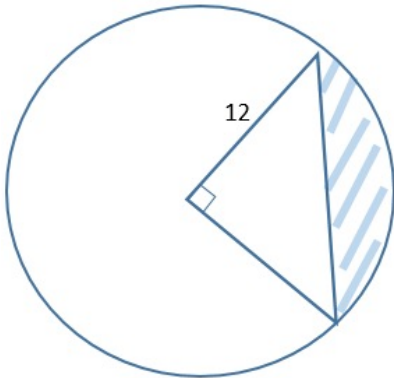
Area of triangle

=



Area of segment

Find the area of the segment.



$$\text{Area of sector} = \frac{90}{360} \cdot \pi(12)^2$$

$$\text{Area of sector} = \frac{1}{4} \cdot 144\pi = 36\pi = 113.04$$

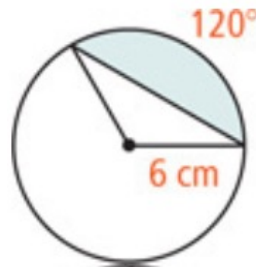
$$\text{Area of triangle} = \frac{1}{2} \cdot 12 \cdot 12 = 72$$

$$\text{Area of segment} = 113.04 - 72 = 41.04 \text{ units}^2$$

# U5L7 – Area of a Segment



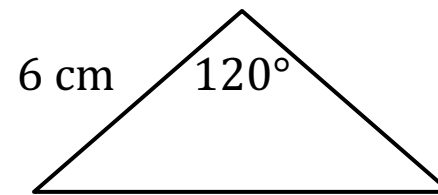
Find the area of the segment.



$$\text{Area of sector} = \frac{120}{360} \cdot \pi(6 \text{ cm})^2$$

$$\text{Area of sector} = \frac{1}{3} \cdot 36\pi = \mathbf{12\pi}$$

$$\text{Area of sector} = \mathbf{37.68}$$



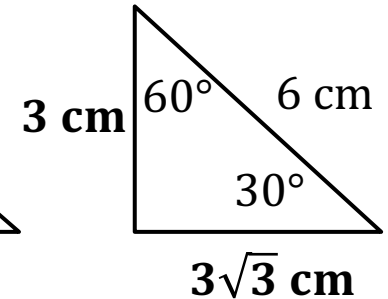
$$h = 3 \text{ cm}$$

$$b = 6\sqrt{3} \text{ cm}$$

$$\text{Area of triangle} = \frac{1}{2} \cdot 3(6\sqrt{3})$$

$$\text{Area of triangle} = \frac{1}{2} \cdot 3(10.39)$$

$$\text{Area of triangle} = \mathbf{15.59}$$



$$\text{Area of segment} = 37.68 - 15.59 = \mathbf{22.09 \text{ cm}^2}$$

# U5L7 – What to know for the quiz



- Area of regular polygons (using trigonometry) (pentagon, hexagon)
- Area of a triangle given SAS
- Central angles and measures of arcs

- Circumference and arc length
- Area and area of sector

# Questions?

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- 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.