

Geometry B Live Lesson Class

U7L1 – Tangent Lines
(Ch. 12-1 in textbook)



Agenda



1. Review topics and problems from Unit 7, Lesson 1 – Tangent Lines.

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

U7L1 – California Common Core State Standards



- HSG-C.A.2: Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.

U7L1 – Objectives



- Use properties of a tangent to a circle

U7L1 – Vocabulary



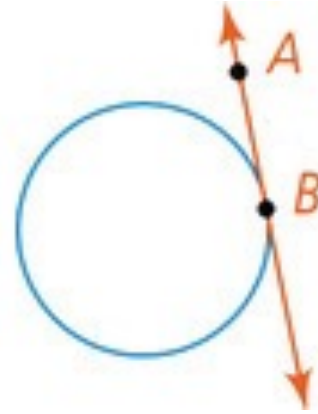
- point of tangency
- tangent to a circle

U7L1 – Tangent Lines



- Tangent Lines

Tangent line: a line in the plane of the circle that intersects the circle in exactly 1 point



point of tangency

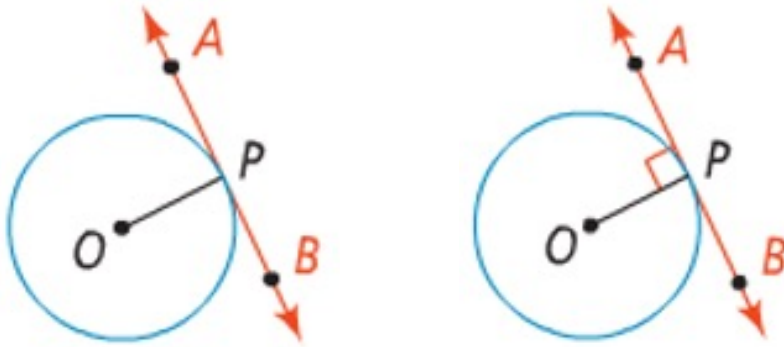
The point where a circle and a tangent intersect is the **point of tangency**.

U7L1 – Theorems



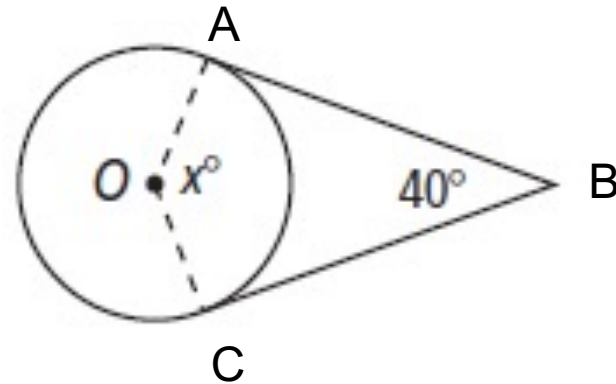
Theorem 12-1 and 12-2

If a line is tangent to a circle, then the line is perpendicular to the radius at the point of tangency.



If a line in the plane of a circle is perpendicular to a radius at its endpoint on the circle, then the line is tangent to the circle.

Assume that lines that appear to be tangent are tangent. O is the center of each circle. What is the value of x ?



$$m\angle A + m\angle B + m\angle C + m\angle O = 360$$

$$90^\circ + 40^\circ + 90^\circ + m\angle O = 360$$

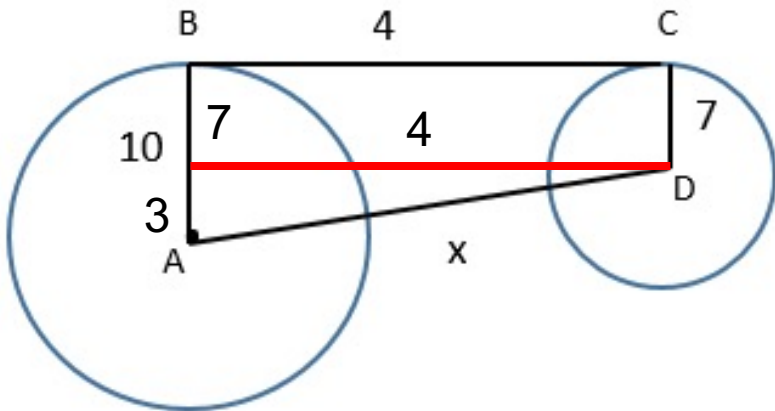
$$220^\circ + m\angle O = 360$$

$$m\angle O = 140$$

U7L1 – Tangent Lines



BC is tangent to circle A at B, and to circle D at C. $AB = 10$, $BC = 4$, and $DC = 7$. Find AD.



$$a^2 + b^2 = c^2$$

$$3^2 + 4^2 = x^2$$

$$9 + 16 = x^2$$

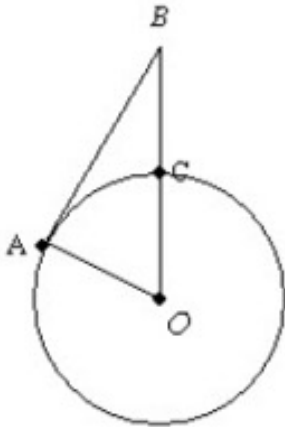
$$25 = x^2$$

$$x = 5$$

U7L1 – Tangent Lines



A satellite is 13,200 miles from the horizon of Earth. Earth's radius is about 4,000 miles. Find the approximate distance the satellite is from the Earth's surface.



$AB = 13,200$
 $OA = OC = 4000$
Find BC

$$a^2 + b^2 = c^2$$

$$AB^2 + OA^2 = OB^2$$

$$13,200^2 + 4,000^2 = x^2$$

$$174,240,000 + 16,000,000 = x^2$$

$$190,240,000 = x^2$$

$$x = 13792.75$$

$$BC = OB - OC$$

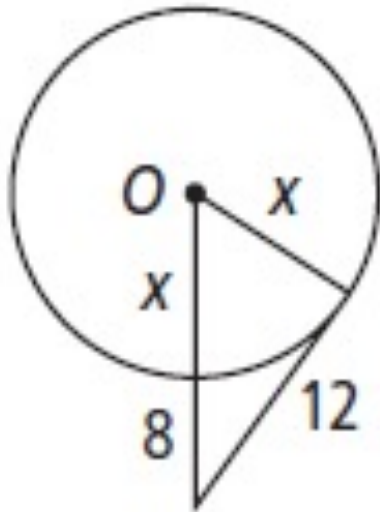
$$BC = 13,792.75 - 4,000$$

$$BC = 9,792.75 \text{ miles}$$

U7L1 – Tangent Lines



What is the value of x to the nearest tenth?



$$a^2 + b^2 = c^2$$

$$x^2 + 12^2 = (x + 8)^2$$

$$x^2 + 144 = x^2 + 16x + 64$$

$$144 = 16x + 64$$

$$80 = 16x$$

$$x = 5$$

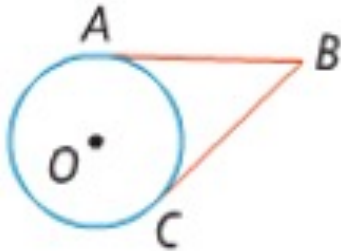
U7L1 – Theorem



Theorem 12-3

If ...

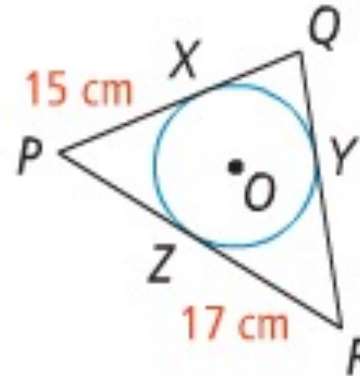
\overline{BA} and \overline{BC} are tangent to $\odot O$



Then ...

$\overline{BA} \cong \overline{BC}$

Circle O is inscribed in triangle PQR, which has a perimeter of 88 cm. What is the length of \overline{QY} ?



$$PX = PZ = 15$$

$$RZ = RY = 17$$

$$QX = QY$$

$$PX + PZ + RZ + RY + QX + QY = 88$$

$$15 + 15 + 17 + 17 + QY + QY = 88$$

$$64 + 2QY = 88$$

$$2QY = 24$$

$$\mathbf{QY = 12}$$

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.