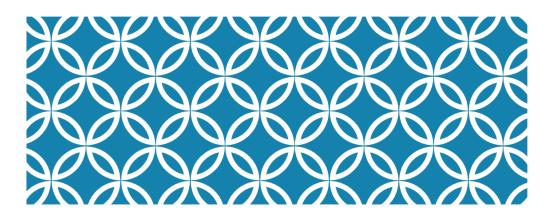
Click Link Below to Open the Interactive Pear Deck PowerPoint https://app.peardeck.com/student/tmeekmcfy







MA.912.GR.6.1

Solve mathematical and real-world problems involving the length of a secant, tangent, segment or chord in a given circle.

MA 912 GR 6.2

Solve mathematical and real-world problems involving the measures of arcs and related angles.

MA.912.GR.6.4

Solve mathematical and real-world problems involving the arc length and area of a sector in a given circle.

MA.912.GR.6.3

Solve mathematical problems involving triangles and quadrilaterals inscribed in a circle

MA.912.GR.5.3

Construct the inscribed and circumscribed circles of a triangle.



MA.912.GR.3.2

Given a mathematical context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals.

MA.912.GR.3.3

Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.

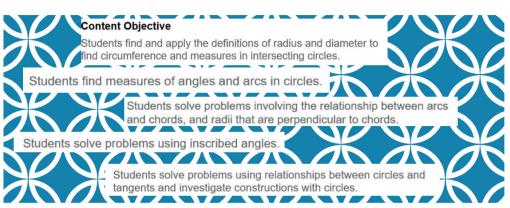
and create

MA.912.GR.7.2

Given a mathematical or real-world context, derive and create the equation of a circle using key features.

MA.912.GR.7.3

Graph and solve mathematical and real-world problems that are modeled with an equation of a circle. Determine and interpret key features in terms of the context.



Students solve problems using relationships between circles, tangents, and secants.

Students write and graph the equations of circles using key features.

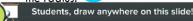
Parts of Circles

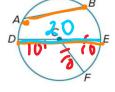
A **circle** is the set of all points in a plane that are the same distance from a given point called the **center of a circle**. The center of the circle below is C.

A **radius of a circle** (plural radii) is a line segment from D the center to a point on a circle. \overline{CD} , \overline{CE} , and \overline{CF} are radii of circle C. Its measure is half the diameter.

A **chord of a circle** is a segment with endpoints on the circle \overrightarrow{AB} and \overrightarrow{DE} are chords of circle C.

A diameter of circle is a chord that passes through the center of a circle \overline{DE} is a diameter of circle C. The measure is twice the radius.







Parts of Circles

Key Concept: Circumference Formula

Words	If a circle has diameter d or radius r, the circumference C equals the diameter times pi or twice the radius times pi.
Symbols	$C = \pi d$ or $C = 2\pi r$







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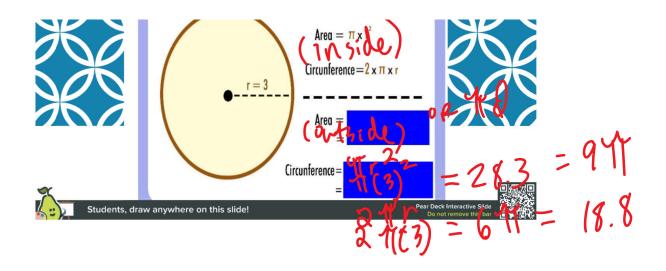
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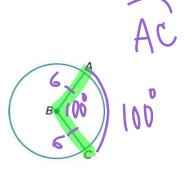


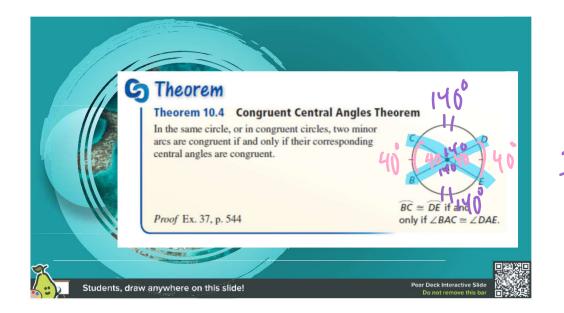


Measuring Angles and Arcs

A central angle of a circle is an angle with a vertex at the center of a circle and sides that are radii. $\angle ABC$ is a central angle of $\bigcirc B$.

A **degree** is $\frac{1}{360}$ of the circular rotation about a point. This leads to the following relationship.



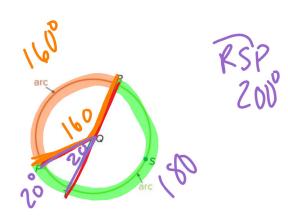


360 -80 280/2 140°

Measuring Angles and Arcs

An **arc** is part of a circle that is defined by two endpoints. A central angle separates the circle into two arcs with measures related to the measure of the central angle.

A **minor arc** has a measure less than 180°. The measure of a minor arc is equal to the measure of its related central angle.





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Students draw anywhere on this slide

This is a Pear Deck Drawing Slide



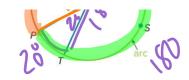
Learn

Measuring Angles and Arcs

A **major arc** has a measure greater than 180° . The measure of a major arc is equal to 360° minus the measure of the minor arc with the same endpoints. $m PSR = 360^{\circ} - m PR$.



A **semicircle** is an arc that measures exactly 180° . The endpoints of a semicircle lie on a diameter. $m RST = 180^{\circ}$.



360 -160 200°

Congruent arcs are arcs in the same or congruent circles that have the same measure.



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Learn

Arc Length and Radian Measure

Key Concept: Arc Length in Degrees

- 12			
Words	The ratio of the length of an arc ℓ to the circumference of the circle is equal to the ratio of the degree measure of the arc to 360° .		
Proportion	$\frac{\ell}{2\pi r} = \frac{x}{360^{\circ}}$		
Equation	$\ell = \frac{x}{360^{\circ}} \cdot 2\pi r \qquad 160$		
2005	.55 360 1102 M		





Inscribed Angles

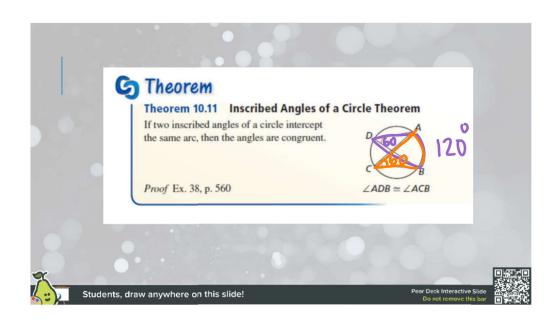
For each of these cases, the following theorem holds true.

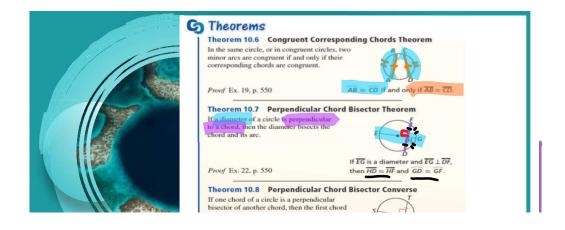
Theorem 10.7: Inscribed Angle Theorem

Words	If an angle is inscribed in a circle, then the measure of		
	the angle equals one half the measure of its intercepted		
	arc.		
Example	$m \angle 1 = \frac{1}{2} m \widehat{AB}$ and $m \widehat{AB} = 2m \angle 1$		
	A		
	Post Dock Interse		



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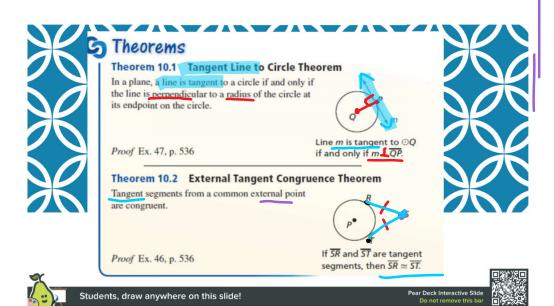
Arcs and Chords

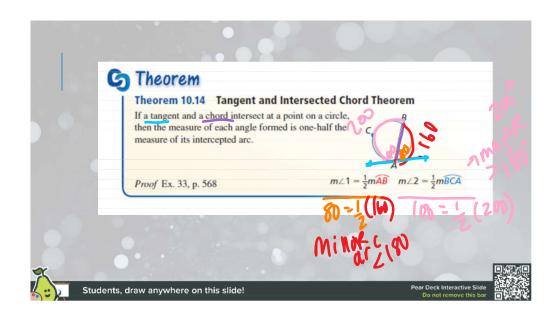
In addition to Theorem 10.3, you can use the following theorem to determine whether two chords in a circle are congruent.

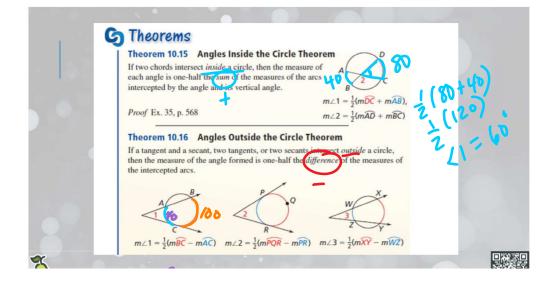
Theorem 10.6

Words	In the same circle or in congruent circles, chords are congruent if and only if they are equidistant from the center.	F
Example	$\overline{FG} \cong \overline{JH}$ if and only if $LX = LY$.	J





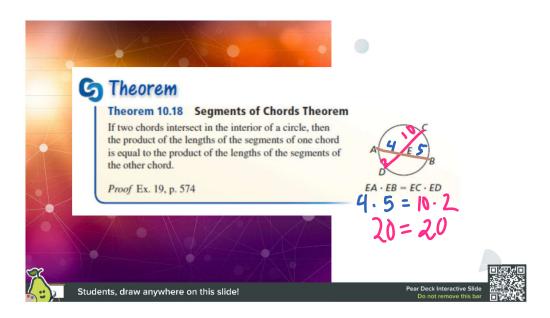


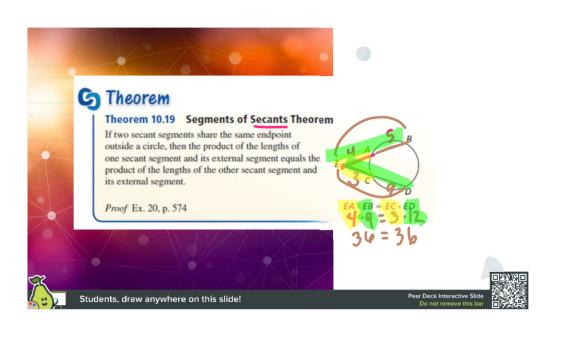










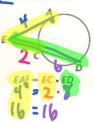




Theorem 10.20 Segments of Secants and Tangents Theorem

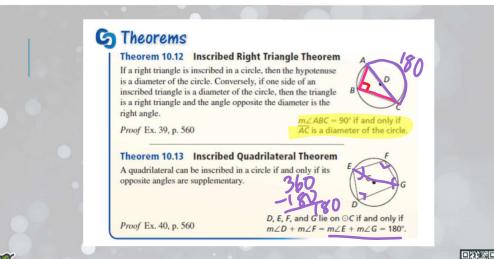
If a secant segment and a tangent segment share an endpoint outside a circle, then the product of the lengths of the secant segment and its external segment equals the square of the length of the tangent segment.

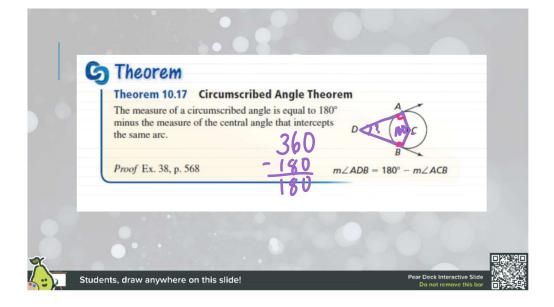
Proof Exs. 21 and 22, p. 574



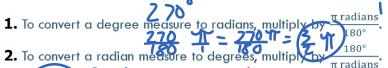


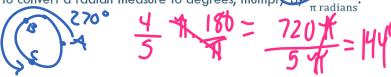






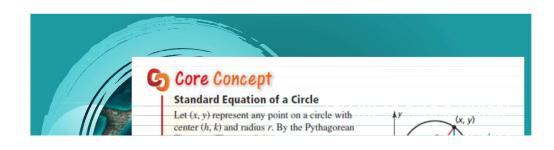
Arc Length and Radian Measure ABC = 270 Key Concept: Degree and Radian Conversion Rules

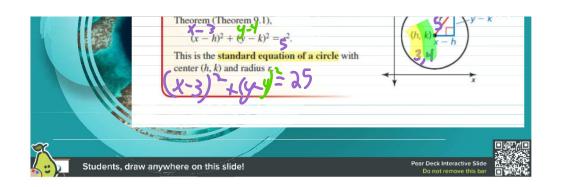


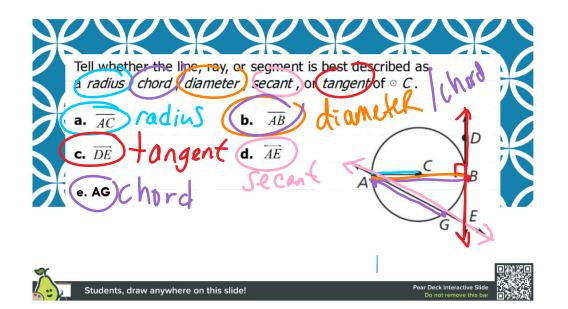






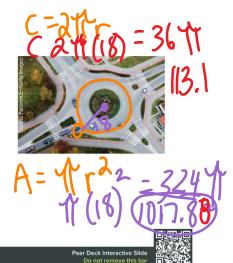






Find Circumference and Area

TRAFFIC CIRCLES Traffic circles, also known as roundabouts, are circular roadways that reflow traffic in one direction around an island. A car enters a traffic circle and is 18 meters from the center of the island. If the car drives around the traffic circle until it is back to its original position, what is the circumference of the car's path? What is the area of the roundabout, including the island in the middle?



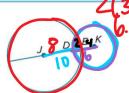


Find Diameter and Radius

Find the diameter and radius of a circle to the nearest hundredth if the circumference of the circle is 77.8

centimeters.

The diameter of $\bigcirc K$ is 12 units, the diameter of $\bigcirc J$ is 20 units, and JD =8 units. Find EK.



Students, draw anywhere on this slide!

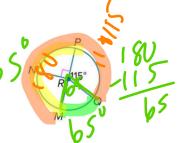


Example 2

Classify Arcs and Find Arc Measures

 \overline{PM} is a diameter of $\bigcirc R$. Identify each arc as a major akc, minor arc of semicircle. Then find its measure.

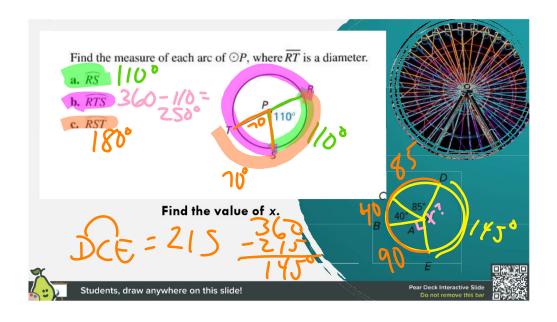
b. MAP Senicirle 180

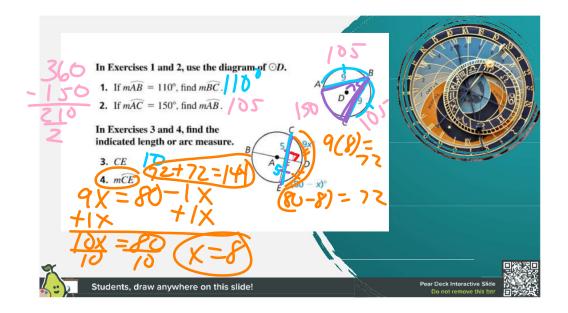


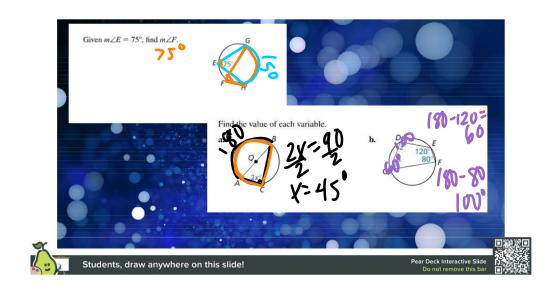
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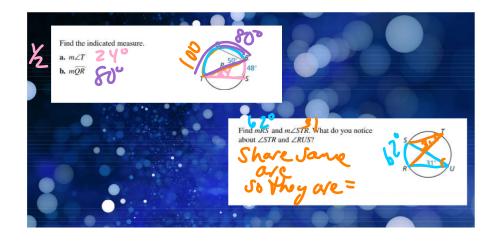
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Use Inscribed Angles to Find Measures

Find each measure.

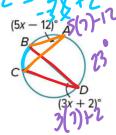
a. $m\widehat{CF}$

b. *m∠C* = 49°

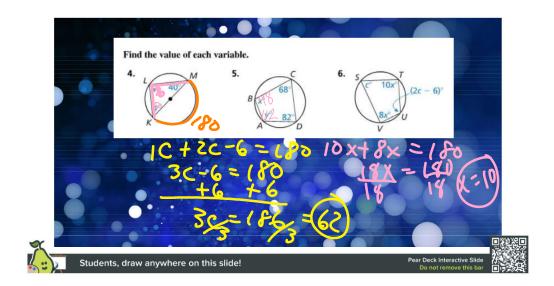
D 98°

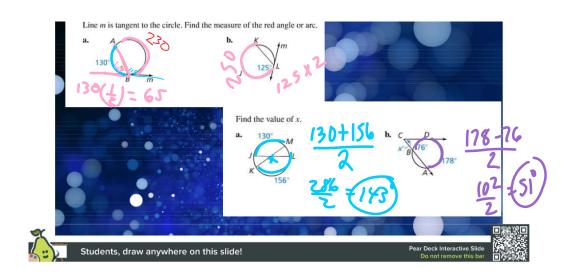
Find $m \angle A$.

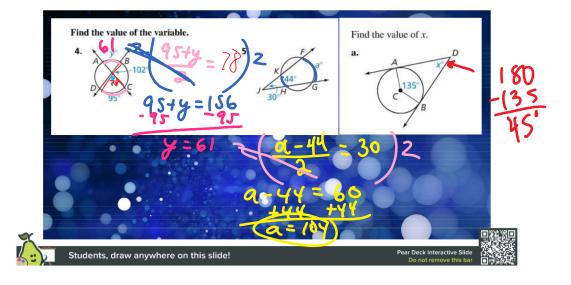
2x=14 2x=14 2x=14 x=7

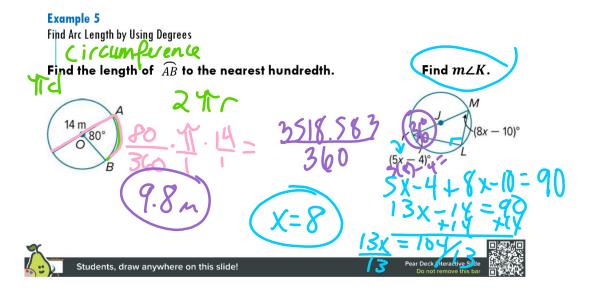




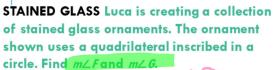


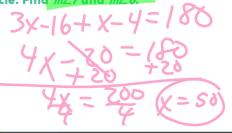




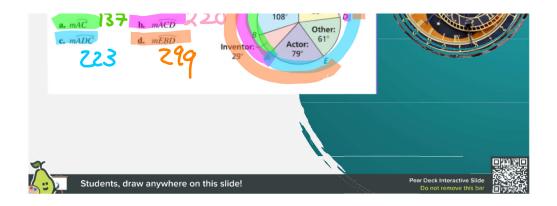


Find Angle Measures



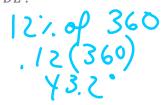


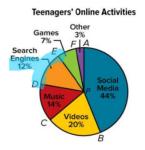
 $(3x-16)^{\circ} = (3y+4)^{\circ}$ $(5y+16)^{\circ} = (3y+4$



Find Arc Measures in Circle Graphs

ONLINE The circle graph shows how teenagers spend their time online. Find $m\widehat{DE}$.







Convert from Degrees to Radian Measure

Write 135° in radians as a multiple of
$$\pi$$
.

27

 $\pi = \frac{q}{12}\pi$

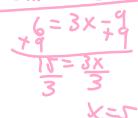
Write $\frac{11\pi}{6}$ radians in degrees.

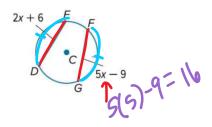
$$\frac{119}{6} \cdot \frac{180}{11} = \frac{1980}{6} \cdot \frac{1}{11} = \frac{331}{6}$$



Use Congruent Arcs to Find Chord Length

In
$$\bigcirc C$$
, $\widehat{DE} \cong \widehat{FG}$.Find **FG**.







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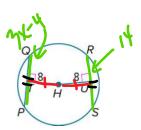


Example 5

Chords Equidistant from the Center

In $\bigcirc H$, PQ = 3x - 4 and RS = 14. Find x.

3x-4=14 +4+4





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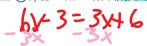


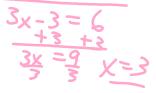
Example 5

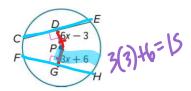
Chords Equidistant from the Center

Check

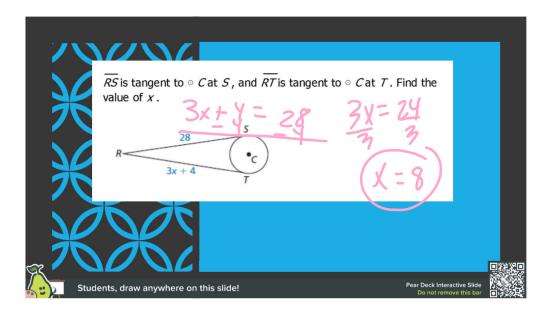
In $\bigcirc P$, CE = FH = 48. Find PG.

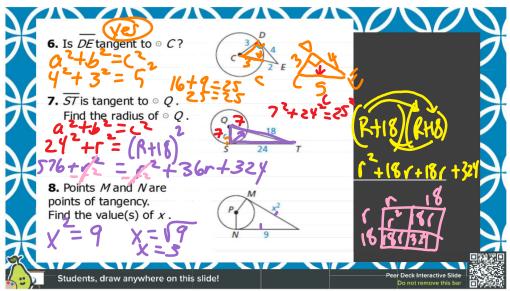




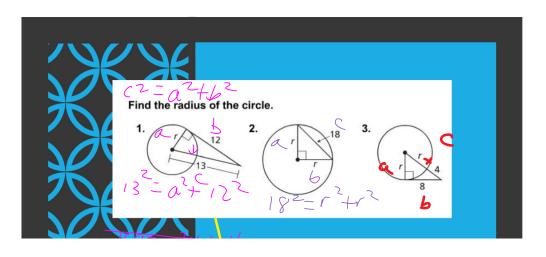


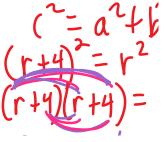


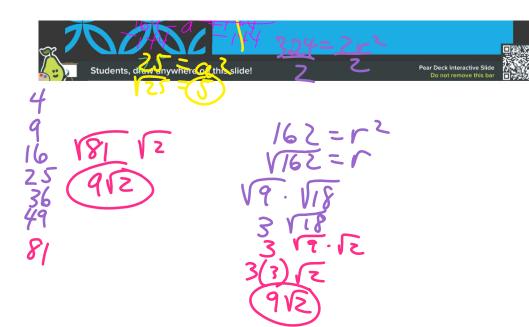




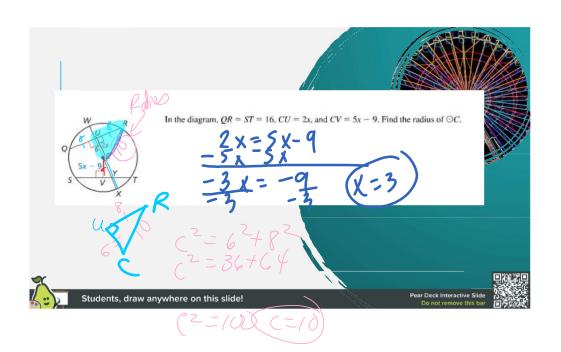
$$r = 7 - \frac{576 = 36r + 924}{-324} - \frac{576}{36} = \frac{36r}{36} + \frac{924}{36}$$



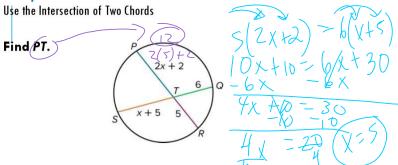




r2+4r+4r 1/2+8r+16= 8r+16= Pf=





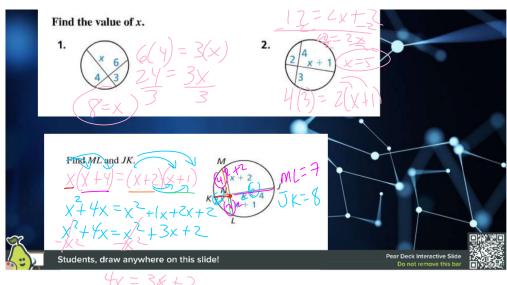




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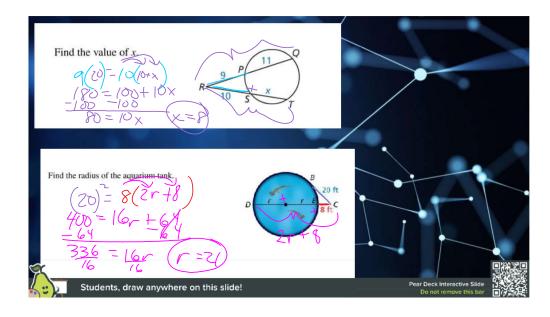


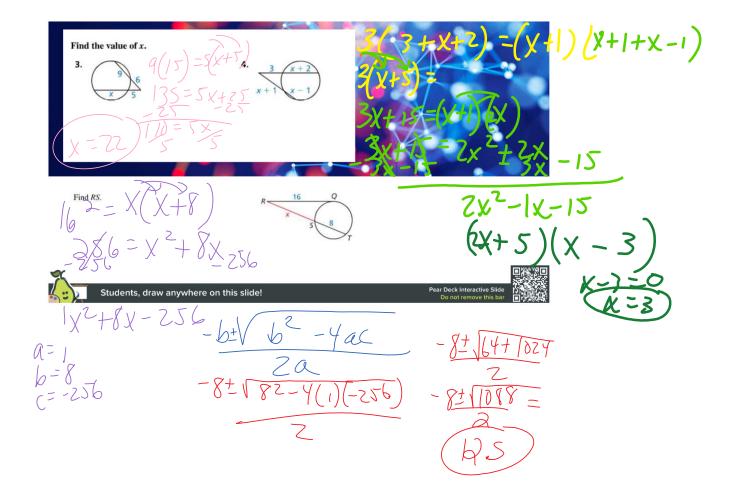


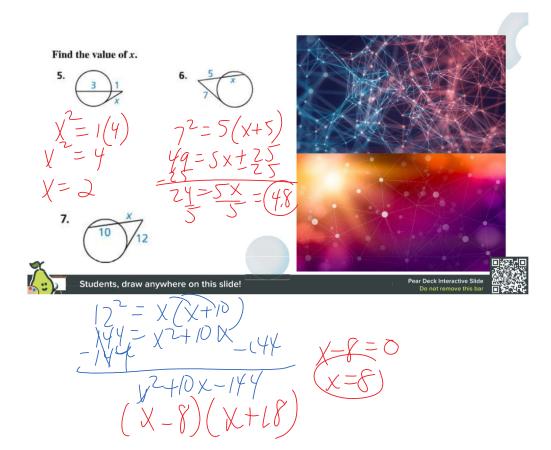
$$4x = 3x + 2$$

$$-3x - Bx$$

$$X = 2$$







Example 5
Use the Intersection of Two Securits 7.9+2=4.9Find AB.

A x+2B

1 2 (2) (-28)

