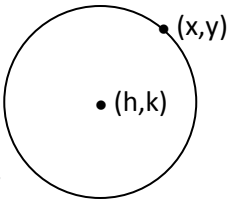
Geometry Unit 11 Graphic Organizer: Circles



Equations of Circles

The **equation for a circle** with a center (h, k) is: _____ *May need CTS!*

Circle Equation → Graph:

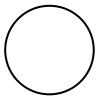
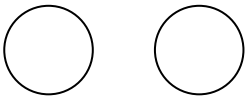
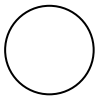
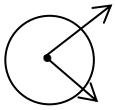
1. _____
2. _____
3. _____
4. _____

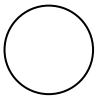
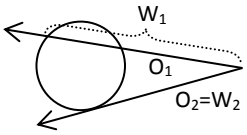
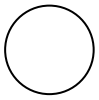
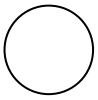
Given Diameter Endpoints → Equation or Graph

1. Calculate center using _____ formula
2. Calculate radius using _____ formula w/cntr & pt
3. Equation: Plug in center and radius; simplify as needed

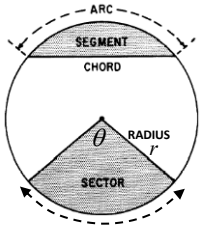
   Graph: Plot center, count *r* to plot 4 pts, connect pts w/arcs

Remember to label your graph and check graphs/equations with a test point

Angle and arc Relationships	∡ Vertex is located: Outside circle	On circle	Inside circle	Center of circle
Example				
∡ Name			Interior	
∡ rays are		Chords/secants/(1 tangent) sharing an endpoint		
Measurements relationship	$m\angle = \frac{1}{2}(m\,large - m\,small)$ Angle measure = ½ difference of arcs			

Segment-Segment Relationships	Same External Point: 2 Tangents	Secant – Tangent	Secant - Secant	Same Internal Pt: Chord-Chord
Example				
Algebraic Equation	Tangent segment$_1$ = Tangent segment$_2$			
Derived from			Similar Triangles (AA~)	

Central Angle Proportions: Sector Area / Arc Length / Radian Measure



Sector Area

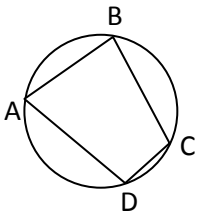
Arc Length

Radian Measure

Other Geometric Relationships in a Circle:

- Arc Addition Postulate: Example _____
- In an inscribed quadrilateral in a ⊙, opposite ∡'s are _____.

  Example: _____



Applications of Circle Properties / Common Reasons in Proofs

Arcs and Chords	• ≅ central angles have ≅ chords • ≅ chords have ≅ arcs • ≅ arcs have ≅ central angles (One ⊙ or 2 ≅ ⊙'s)	
	• If a radius (or diameter) is ⊥ to a chord →it bisects the chord and the arc	
	• Parallel chords intercept congruent arcs	
Radii and Tangents	• In a circle all radii are ≅	
	• A tangent is ⊥ to the radius at the point of tangency	
	• 2 segments tangent to circle from the same external point → tangent segments ≅	
Inscribed Angles	• If an ∡ is inscribed in a semi circle →it is a right ∡	
	• If two inscribed ∡'s intercept the same arc → the ∡'s are ≅	
	• If two inscribed ∡'s intercept ≅ arcs → the ∡'s are ≅	
	• If a quadrilateral is inscribed in a circle → Opposite ∡'s are supplementary	