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| **1.  Central Angle:** A central angle is an angle formed by two intersecting radii such that its vertex is at the center of the circle.

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| Central Angle = Intercepted Archttp://www.regentsprep.org/regents/math/geometry/gp15/circleangleformula.gif |

<*AOB*is a central angle. Its *intercepted arc* is the minor arc from *A* to *B*. *m<AOB* = 80°  | http://www.regentsprep.org/regents/math/geometry/gp15/circle1.gif |
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| ***Theorem involving central angles*:In a circle, or congruent circles, congruent central angles have congruent arcs.** |

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| **2.  Inscribed Angle:**An inscribed angle is an angle with its vertex "on" the circle, formed by two intersecting chords.

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| Inscribed Angle = http://www.regentsprep.org/regents/math/geometry/gp15/Circle5.gifIntercepted Archttp://www.regentsprep.org/regents/math/geometry/gp15/Circle21.gif |

<*ABC* is an inscribed angle. Its *intercepted arc*is the minor arc from *A* to *C*.*m<ABC* = 50° |           http://www.regentsprep.org/regents/math/geometry/gp15/circle2.gif |
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| ***Special situations involving inscribed angles*:** |
| http://www.regentsprep.org/regents/math/geometry/gp15/SPECIAL1.gif | **An angle inscribed in asemi-circle is a right angle.**http://www.regentsprep.org/regents/math/geometry/gp15/Circle27.gif  |
| **In a circle, inscribed circles that intercept the same arc are congruent.** |

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| *A quadrilateral inscribed in a circle is called a cyclic quadrilateral.* |
| http://www.regentsprep.org/regents/math/geometry/gp15/SPECIAL2.gif | **The opposite angles in a cyclic quadrilateral are supplementary.**http://www.regentsprep.org/regents/math/geometry/gp15/Circle28.gifhttp://www.regentsprep.org/regents/math/geometry/gp15/Circle29.gifhttp://www.regentsprep.org/regents/math/geometry/gp15/Circle30.gif |
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| **3.  Tangent Chord Angle:**An angle formed by an intersecting tangent and chord has its vertex "on" the circle.

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| Tangent Chord Angle = http://www.regentsprep.org/regents/math/geometry/gp15/Circle5.gifIntercepted Archttp://www.regentsprep.org/regents/math/geometry/gp15/Circle22.gif |

<*ABC* is an angle formed by a tangent and chord.Its *intercepted arc* is the minor arc from *A*to *B*.*m<ABC* = 60°  | http://www.regentsprep.org/regents/math/geometry/gp15/circle3.gif |

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| **4.  Angle Formed Inside of a Circle by Two Intersecting Chords:**When two chords intersect "inside" a circle, four angles are formed.  At the point of intersection, two sets of vertical angles can be seen in the corners of the X that is formed on the picture.  Remember:  vertical angles are equal.

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| Angle Formed **I**nside by Two Chords = http://www.regentsprep.org/regents/math/geometry/gp15/Circle5.gif**Sum**of Intercepted Arcs  http://www.regentsprep.org/regents/math/geometry/gp15/Circle23.gif |

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| Once you have found ONE of these angles, you automatically know the sizes of the other three by using your knowledge of vertical angles (being congruent) and adjacent angles forming a straight line (measures adding to 180). |

  | http://www.regentsprep.org/regents/math/geometry/gp15/circle4.gif<*BED* is formed by two intersecting chords. Its *intercepted arcs*are http://www.regentsprep.org/regents/math/geometry/gp15/Circle6.gif.  [Note:  the intercepted arcs belong to the set of vertical angles.] http://www.regentsprep.org/regents/math/geometry/gp15/Circle8.gifalso, *m<CEA* = 120° (vetical angle)*m<BEC*and *m<DEA* = 60° by straight line. |

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| **5.  Angle Formed Outside of a Circle by the Intersection of:**"Two Tangents" or "Two Secants" or "a Tangent and a Secant".

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| The formulas for all THREE of these situations are the same:Angle Formed Outside = http://www.regentsprep.org/regents/math/geometry/gp15/Circle5.gif**Difference**of Intercepted Arcs  (When subtracting, start with the larger arc.) |

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| **Two Tangents:**<*ABC* is formed by two tangentsintersecting outside of circle *O*.  The *intercepted arcs* are minor arc http://www.regentsprep.org/regents/math/geometry/gp15/Circle14.gif and major arc http://www.regentsprep.org/regents/math/geometry/gp15/Circle15.gif.  These two arcs together comprise the entire circle.http://www.regentsprep.org/regents/math/geometry/gp15/Circle9.gif | http://www.regentsprep.org/regents/math/geometry/gp15/circle7.gifhttp://www.regentsprep.org/regents/math/geometry/gp15/Circle24.gif |
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| **Two Secants:**<*ACE* is formed by two secantsintersecting outside of circle *O*.  The *intercepted arcs* are minor arcs http://www.regentsprep.org/regents/math/geometry/gp15/Circle16.gif and http://www.regentsprep.org/regents/math/geometry/gp15/Circle17.gif.  http://www.regentsprep.org/regents/math/geometry/gp15/Circle12.gif | http://www.regentsprep.org/regents/math/geometry/gp15/circle10.gifhttp://www.regentsprep.org/regents/math/geometry/gp15/Circle25.gif |

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| **a Tangent and a Secant:**<*ABD* is formed by a tangent and a secantintersecting outside of circle *O*.  The *intercepted arcs* are minor arcs http://www.regentsprep.org/regents/math/geometry/gp15/Circle18.gif and http://www.regentsprep.org/regents/math/geometry/gp15/Circle19.gif.  http://www.regentsprep.org/regents/math/geometry/gp15/Circle13.gif | http://www.regentsprep.org/regents/math/geometry/gp15/circle11.gifhttp://www.regentsprep.org/regents/math/geometry/gp15/Circle26.gif |

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