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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.    |  | | --- | | Central Angle = Intercepted Arc http://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 | | |  | | --- | | ***Theorem involving central angles*: In a circle, or congruent circles, congruent central angles have congruent arcs.** | | | |
| |  |  |  | | --- | --- | --- | | **2.  Inscribed Angle:** An inscribed angle is an angle with its vertex "on" the circle, formed by two intersecting chords.   |  | | --- | | Inscribed Angle = http://www.regentsprep.org/regents/math/geometry/gp15/Circle5.gifIntercepted Arc http://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 | | |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | ***Special situations involving inscribed angles*:** | | | http://www.regentsprep.org/regents/math/geometry/gp15/SPECIAL1.gif | **An angle inscribed in a semi-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.** | | | |  |  | | --- | --- | | *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.gif http://www.regentsprep.org/regents/math/geometry/gp15/Circle29.gif http://www.regentsprep.org/regents/math/geometry/gp15/Circle30.gif | |  | | | | |
| |  |  |  | | --- | --- | --- | | **3.  Tangent Chord Angle:** An angle formed by an intersecting tangent and chord has its vertex "on" the circle.   |  | | --- | | Tangent Chord Angle =  http://www.regentsprep.org/regents/math/geometry/gp15/Circle5.gifIntercepted Arc http://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 | |
| |  |  |  |  | | --- | --- | --- | --- | | **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.   |  | | --- | | 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 |  |  | | --- | | 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.gif also, *m<CEA* = 120° (vetical angle) *m<BEC*and *m<DEA* = 60° by straight line. | |
| **5.  Angle Formed Outside of a Circle by the Intersection of:** "Two Tangents" or "Two Secants" or "a Tangent and a Secant".   |  | | --- | | 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.) | |
| |  |  | | --- | --- | | **Two Tangents:** <*ABC* is formed by two tangents intersecting 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.gif http://www.regentsprep.org/regents/math/geometry/gp15/Circle24.gif | |  | | |
| |  |  | | --- | --- | | **Two Secants:** <*ACE* is formed by two secants intersecting 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.gif http://www.regentsprep.org/regents/math/geometry/gp15/Circle25.gif | |
| |  |  | | --- | --- | | **a Tangent and a Secant:** <*ABD* is formed by a tangent and a secant intersecting 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.gif http://www.regentsprep.org/regents/math/geometry/gp15/Circle26.gif | |