Inscribed Angles and Intercepted Arcs

Inscribed angle: an angle whose vertex lies on the circle and whose sides are chords of a circle

The measure of an inscribed angle is **half** the measure of its intercepted arc.

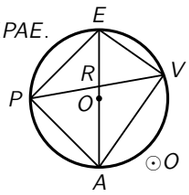
In a circle, if two inscribed angles intercept the same arc or congruent arcs, then the angles are congruent.

An angle inscribed in a semicircle is a right angle and therefore the measure is equal to 90°.

If a quadrilateral is inscribed in a circle, then its opposite angles are supplementary.

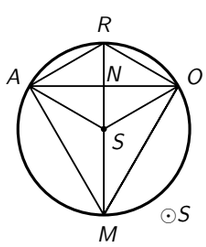
Practice Exercises

A. Refer to $\odot O$ to answer the following.



1. Name the angle that intercept $\overset{\frown}{AP}$.
2. Name the angles that intercept $\overset{\frown}{EV}$.
3. Name the arc that is intercepted by $\angle PAE$.
4. Name the arc that is intercepted by $\angle EVP$.
5. If $m\angle PEA = 48°$, then $m\overset{\frown}{AP} =$ ____ and $m\angle AVP =$ ____.
6. $m\angle EPA =$ ____
7. $m\angle EVP + m\angle PVA =$ ____
8. If $m\angle VEP = 100°$, then $m\angle PAV =$ ____.

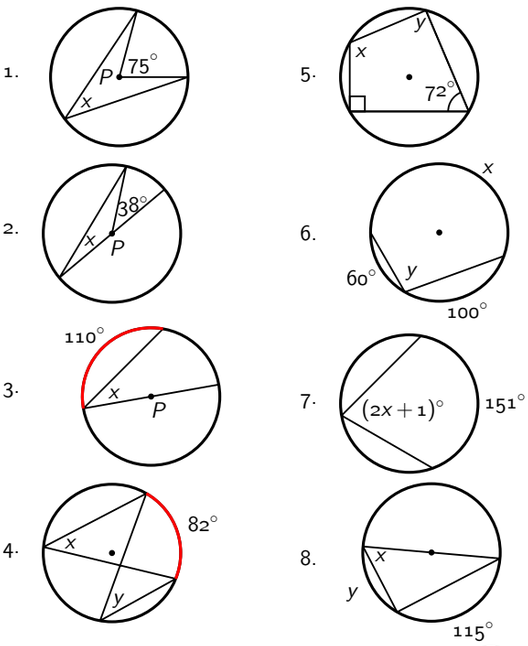
B. Given $\odot S, \overline{AR} \cong \overline{RO} \cong \overline{OS} \cong \overline{SA}, m\angle AMR = 3x + 20$ and $m\angle OMR = x + 30$. Find each measure.



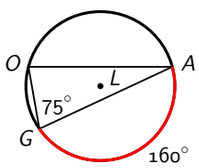
1. x
2. $m\angle AMR$
3. $m\angle ORM$
4. $m\overset{\frown}{AM}$
5. $m\angle RNO$
6. $m\angle RAM$
7. $m\overset{\frown}{AR}$
8. $m\overset{\frown}{OM}$
9. $m\angle ROM$
10. $m\angle AMO$

Problem Set

A. Use the given figures to find the value of x and y.



B. ΔGOA is inscribed in $\odot L$. If $m\angle OGA = 75°$ and $m\overset{\frown}{AG} = 160°$, find:



1. $m\overset{\frown}{OA}$
2. $m\overset{\frown}{OG}$
3. $m\angle GOA$
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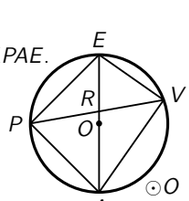

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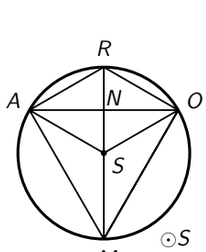

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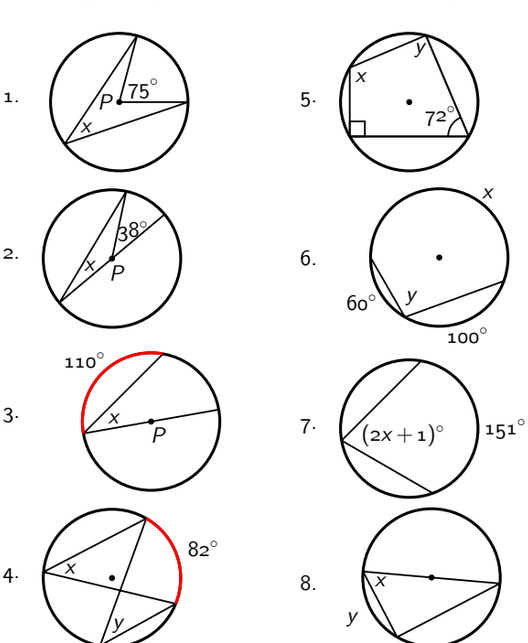

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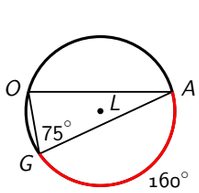

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