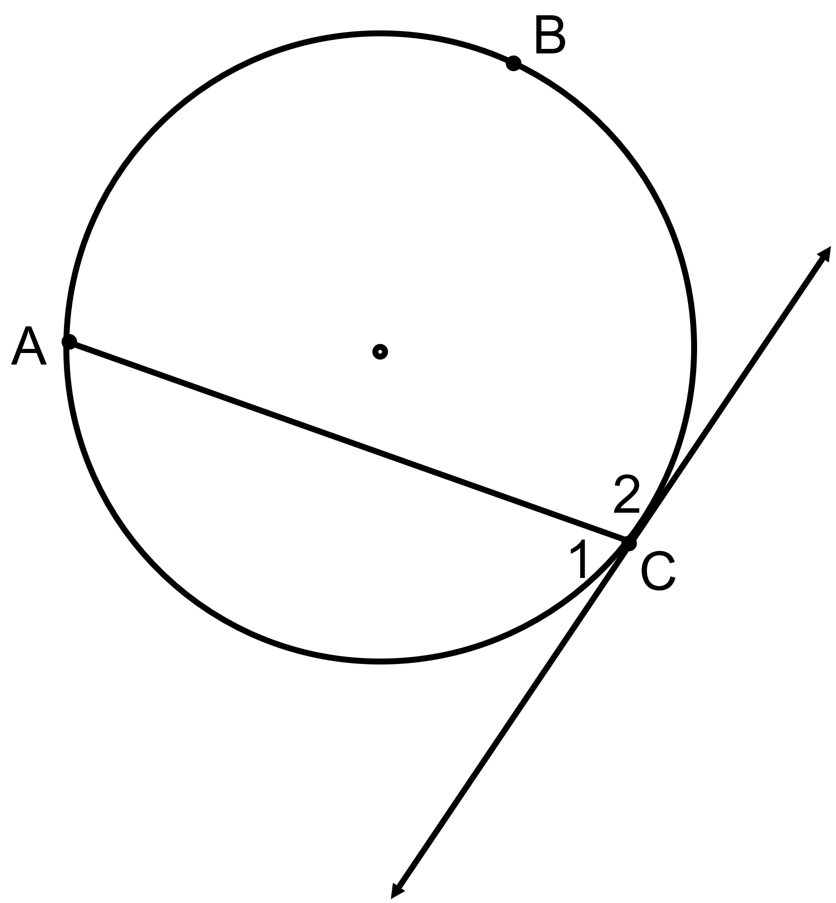
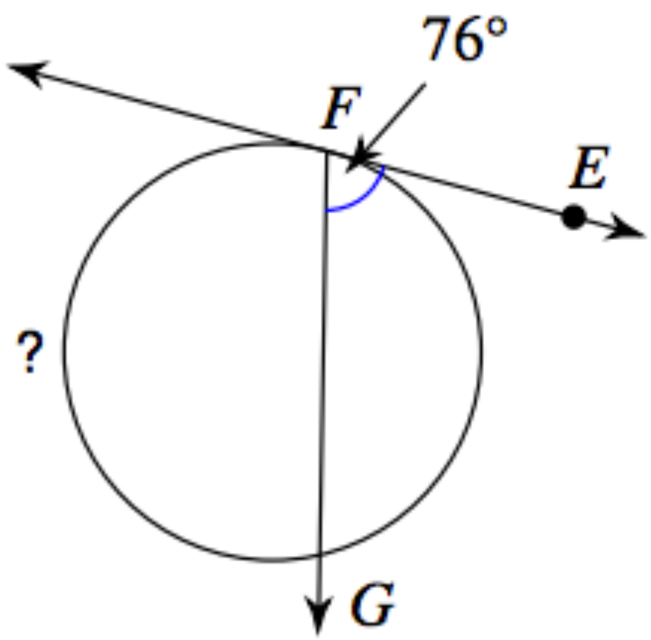
Apply other angle relationships in Circles

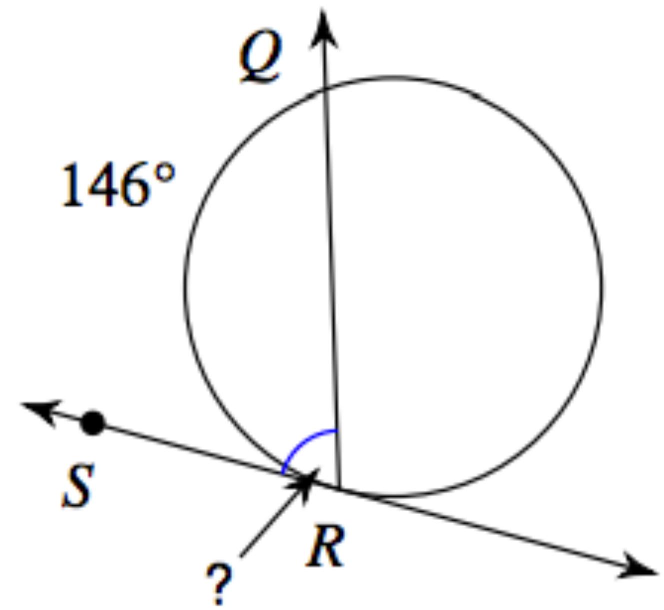
Theorem: If a tangent and a chord intersect at a point on a circle, then the measure of each angle formed is 1/2 the measure of it's intercepted arc.

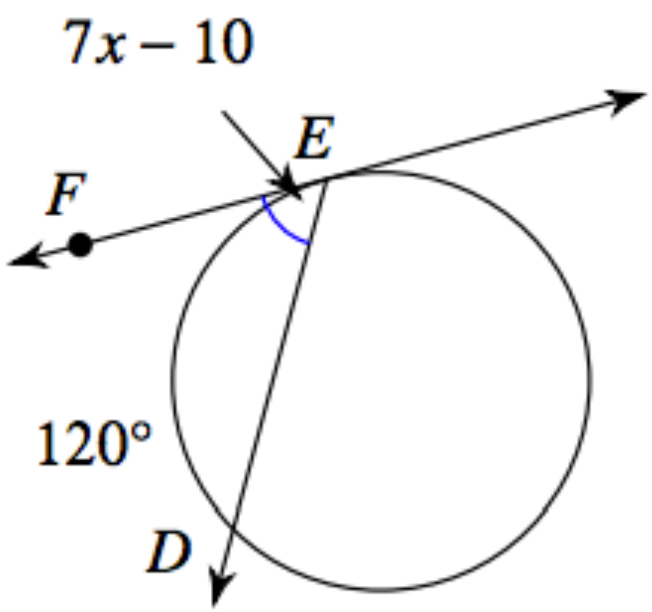


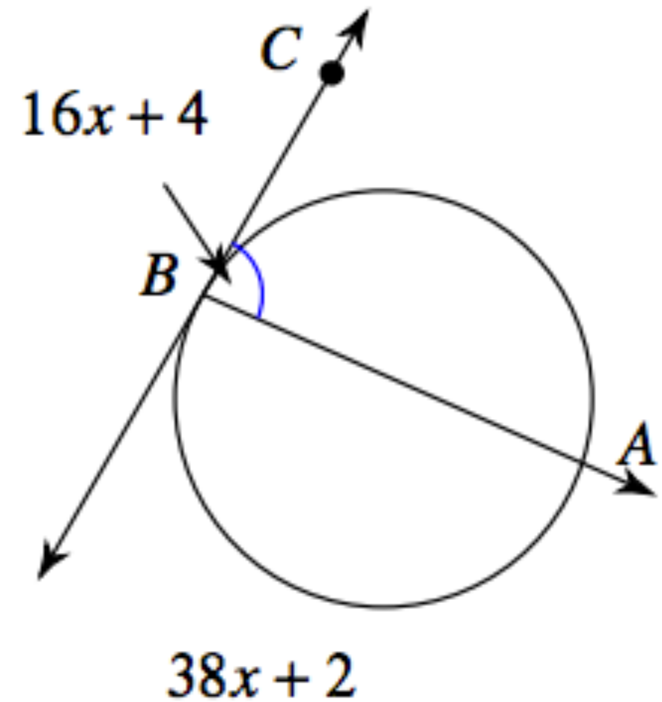
$m\angle 1 = (1/2)\ m\text{AC}$

$m\angle 2 = (1/2)\ m\text{ABC}$

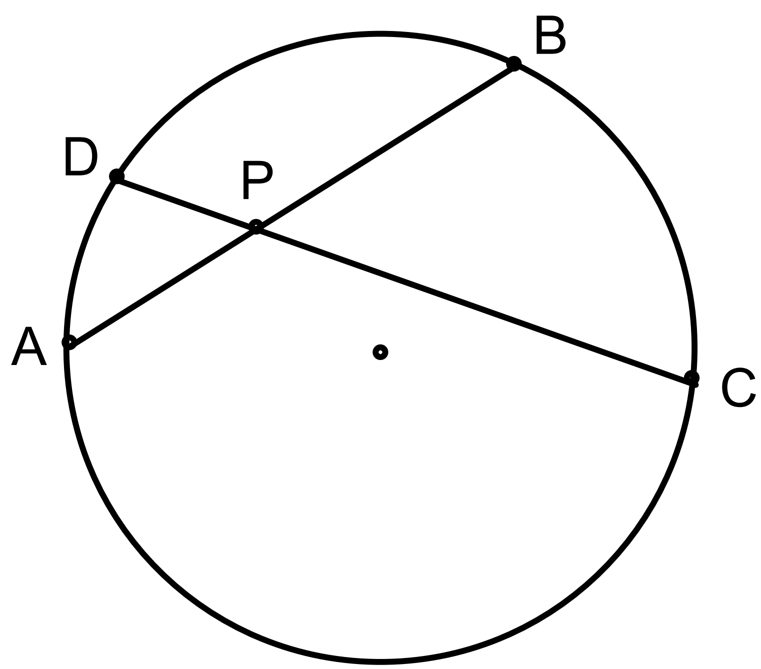

76°
F
E
?
G


Q
146°
S
?
R


7x – 10
E
F
120°
D


C
16x + 4
B
A
38x + 2

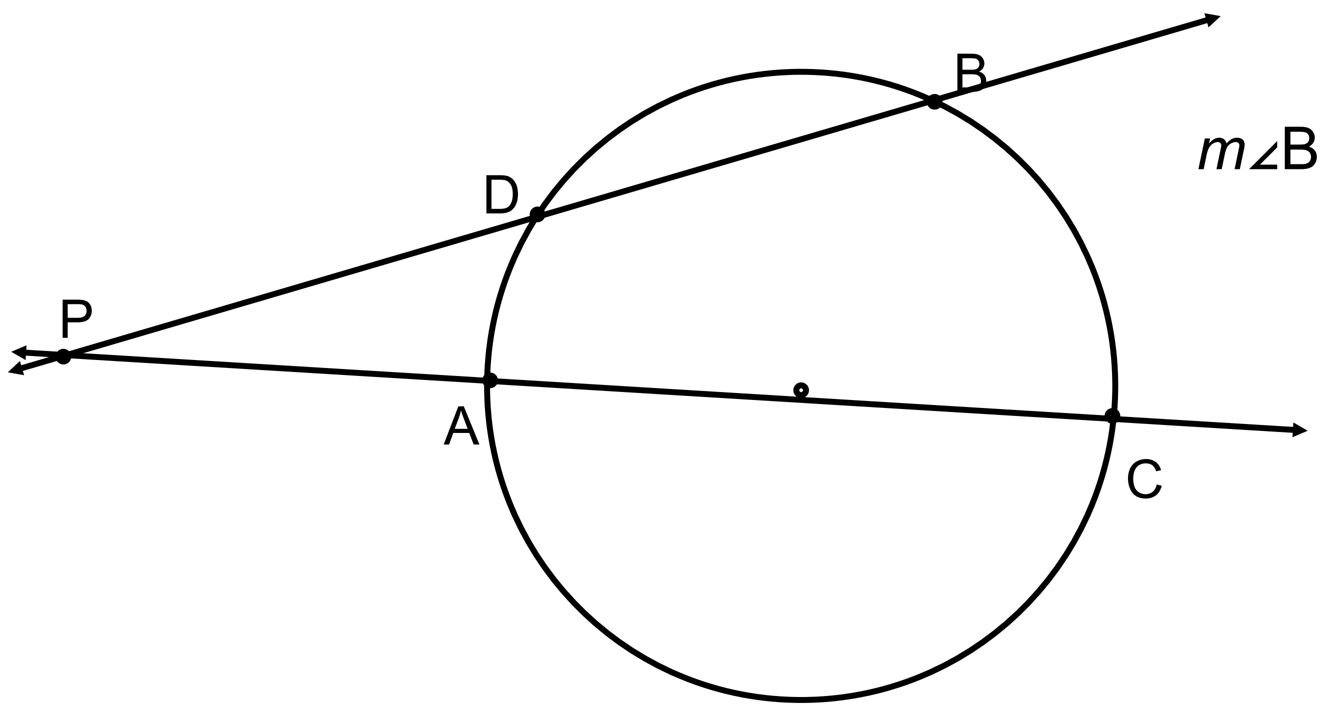
Angles Inside the Circle Theorem: If two chords intersect inside a circle then the measure of each angle is 1/2 the sum of the measures of the arcs intercepted by the angle and its vertical angle



$m\angle BPC = (1/2)\,(m\overset{\frown}{AD} + m\overset{\frown}{BC})$

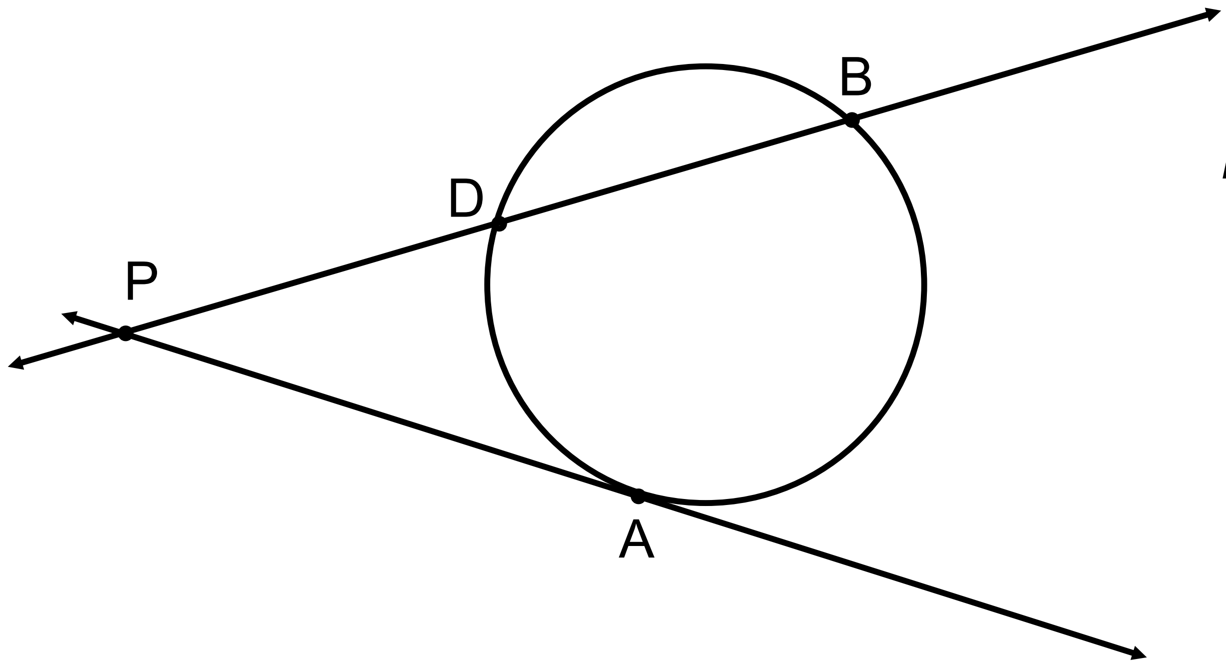
$m\angle APC = (1/2)\,(m\overset{\frown}{AC} + m\overset{\frown}{DB})$

Angles Outside the Circle Theorem: If a tangent and a secant, two tangents, or two secants intersect outside of a circle, then the measure of the angle formed is 1/2 the *difference* of the measures of the intercepted arcs



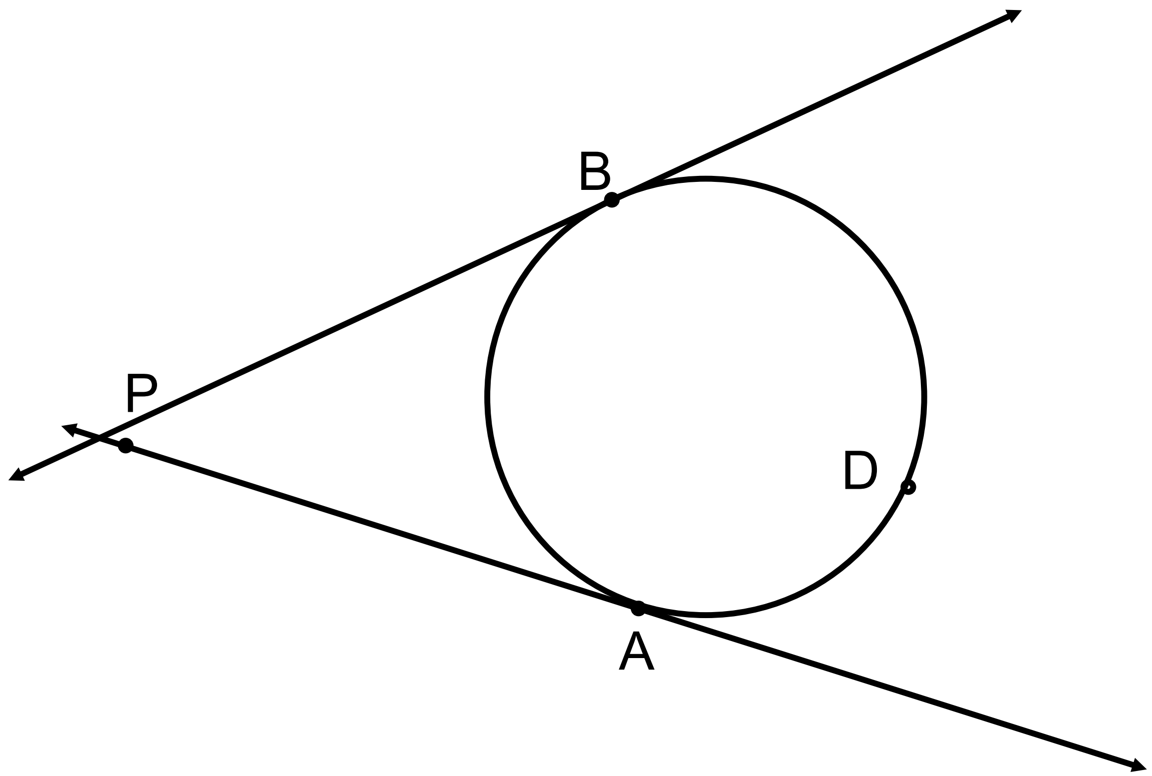
$m\angle BPC = (1/2)(m\overset{\frown}{BC} - m\overset{\frown}{AD})$

Angles Outside the Circle Theorem



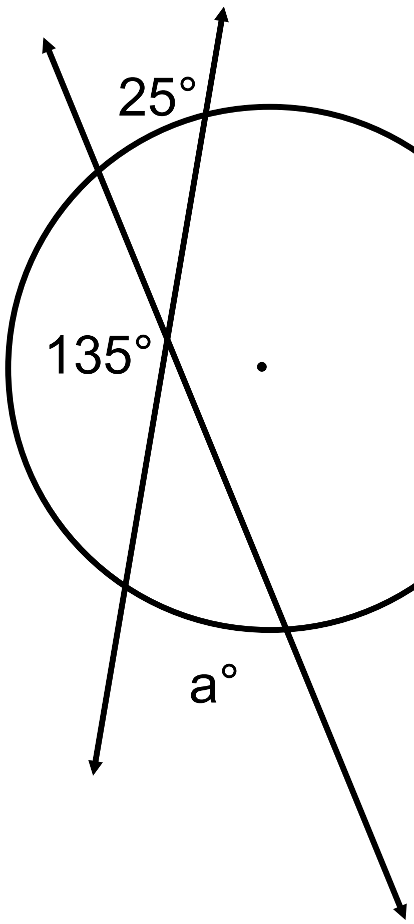
$m\angle BPC = (1/2)\,(mBA - mAD)$

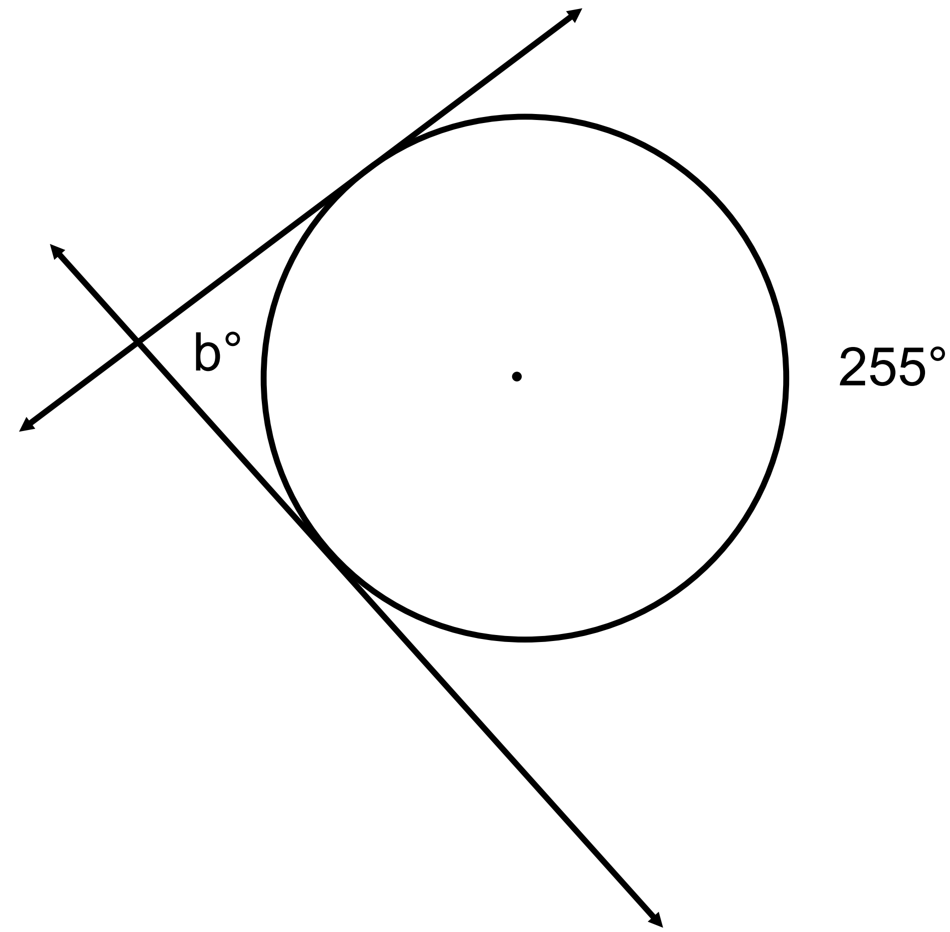
Angles Outside the Circle Theorem

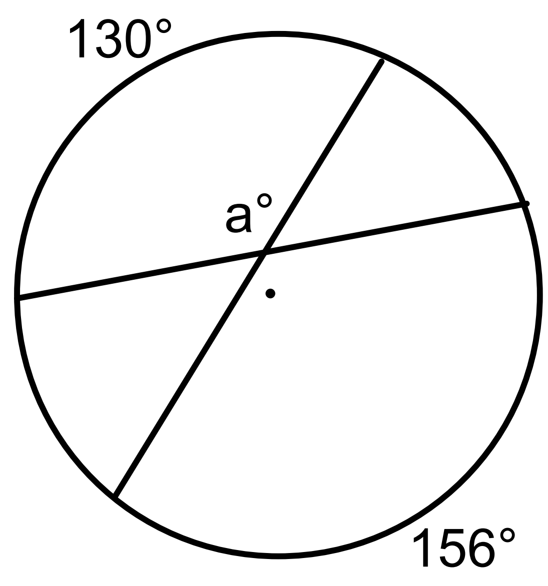


$m\angle BPC = (1/2)\ (m\overset{\frown}{BDA} - m\overset{\frown}{AB})$

$m\angle BPC = (1/2)\ (360 - 2m\overset{\frown}{AB})$


25°
135°
a°


b°
255°


130°
a°
156°