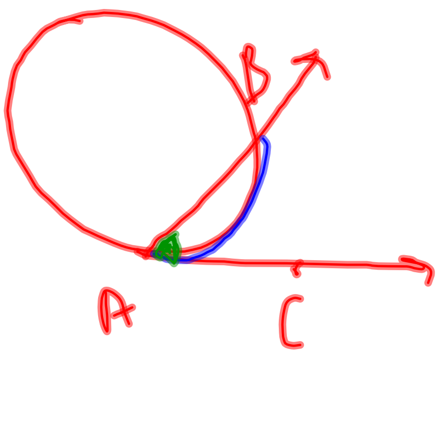
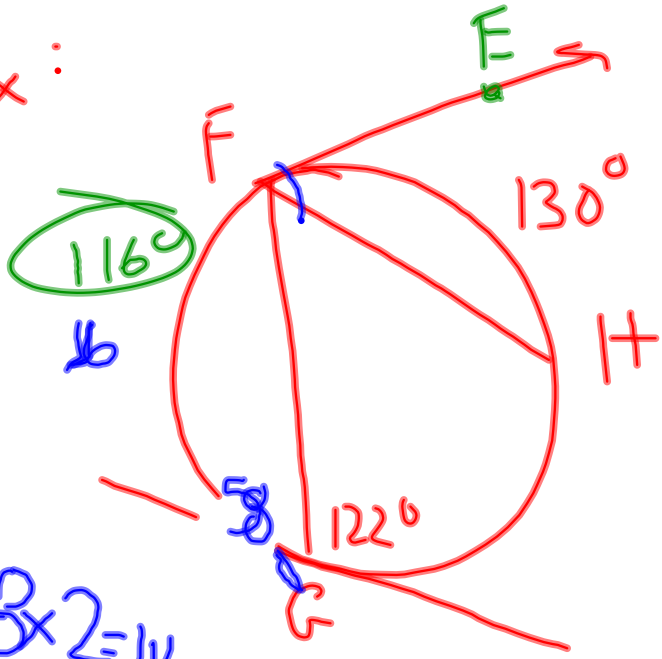
# 11-5 ∠ relationships in ⊙

**Theorem 11-5-1:** if a tangent and secant intersect a circle at the pt. of tangency, then the measure of the ∠ formed is ½ the measure of the intercepted arc.




$m\angle BAC = \frac{1}{2} m\overset{\frown}{AB}$

Ex:




$58 \times 2 = 116$

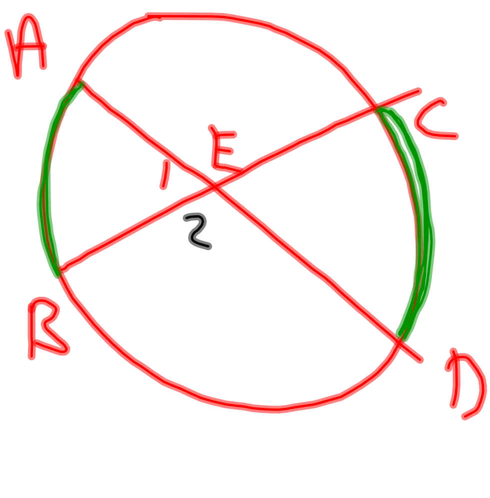
$m\angle EFH$

$130 \div 2 = 65$

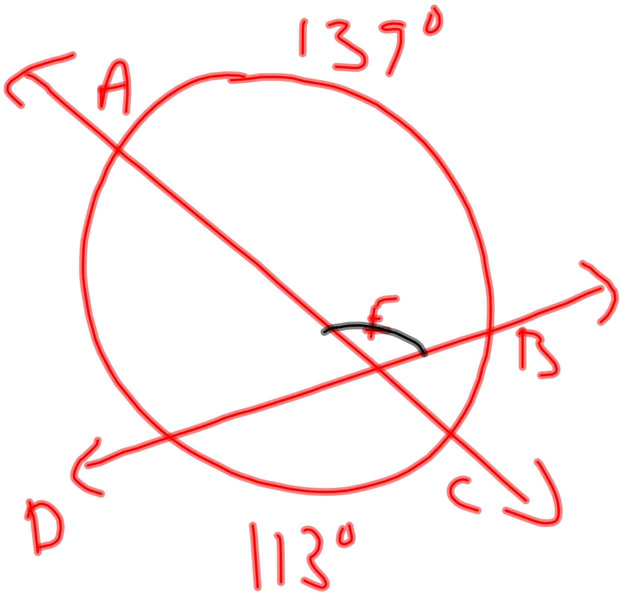
$m\overset{\frown}{FG}$

$180 - 122 = 58$

<u>Theorem 11-5-2</u>: if 2 secants (or chords) intersect in the interior, then the measure of each ∠ formed is ½ the sum of the measures of its intercepted arcs.




$m\angle 1 = \frac{1}{2}(m\overset{\frown}{AB} + m\overset{\frown}{CD})$



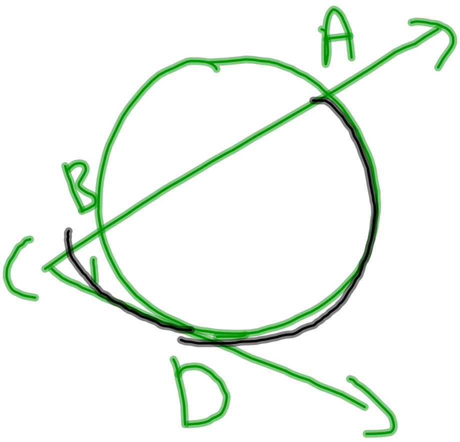

m∠AEB

$$\frac{1}{2}(139 + 113)$$

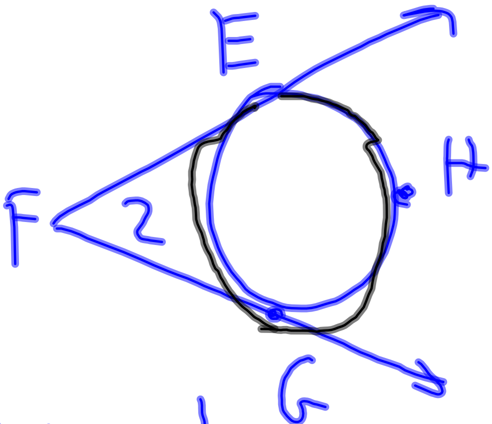
$$= 126°$$

# Theorem 11-5-3

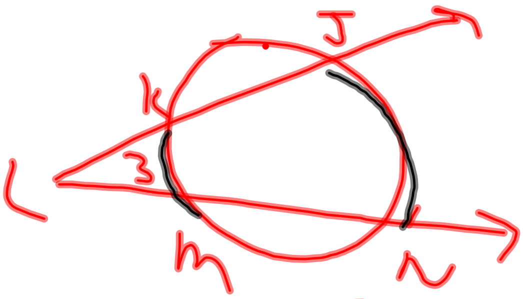
if a tangent + secant, 2 tangents, or 2 secants, intersect in the exterior, then the measure of the ∠ formed is ½ the difference of the measures of the intercepted arcs.




$$m\angle 1 = \frac{1}{2}\left(m\overset{\frown}{AD} - m\overset{\frown}{BD}\right)$$

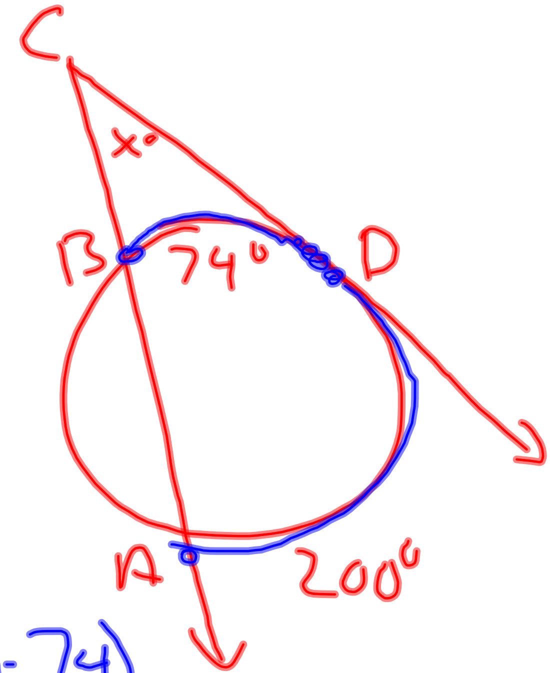



$$m\angle 2 = \frac{1}{2}\left(m\overset{\frown}{EHG} - m\overset{\frown}{EG}\right)$$




$$m\angle 3 = \frac{1}{2}\left(m\overset{\frown}{JN} - m\overset{\frown}{KM}\right)$$

Ex:




$m\angle x$

$$m\angle x = \frac{1}{2}(200 - 74)$$
$$= 63°$$

p. 786

2-30 even,

odds extra credit