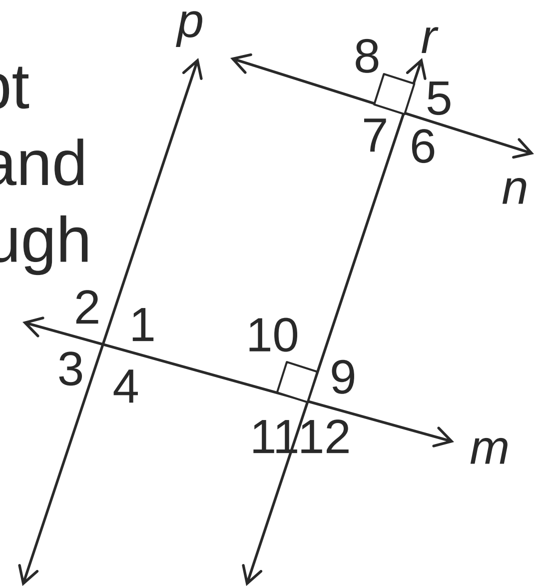
Tuesday, February 12, 2013 Agenda

- TISK / No MM
- Lesson 9-6 Secants, Tangents, & Angle Measures
- Homework: 9-6 problems in packet 2

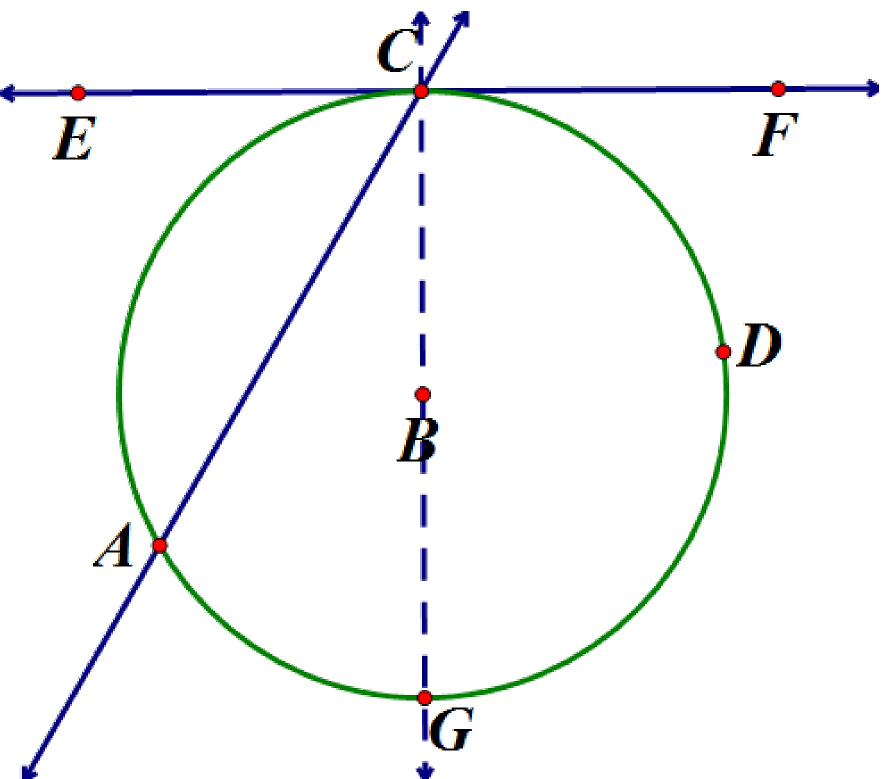
TISK Problems

1. Simplify completely: $\frac{35xy}{14x^2y+10xy^2}$
2. Write the equation of a line in slope-intercept form that passes through the point (-5,-12) and is perpendicular to the line that passes through the points (2, 15) and (-3, 8).
3. Is $p \parallel r$? State postulates or theorems that justify your answer.



§9-6 Secants, Tangents, & Angle Measures

- Look at the following tangent and secant in $\odot B$:



What do you suppose the measure of AC is? How could we prove it?

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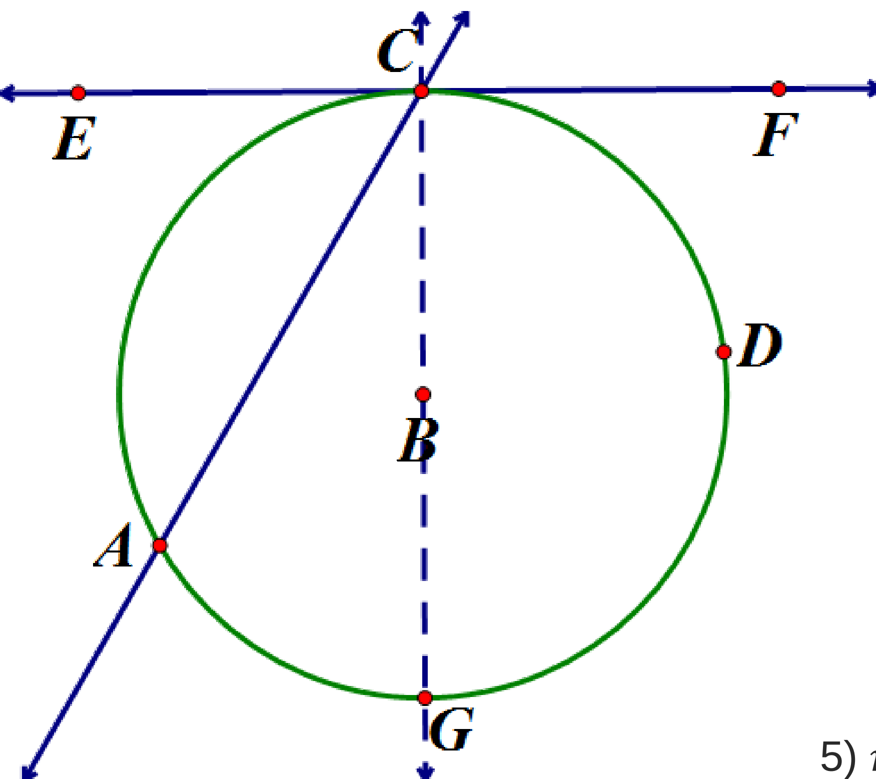
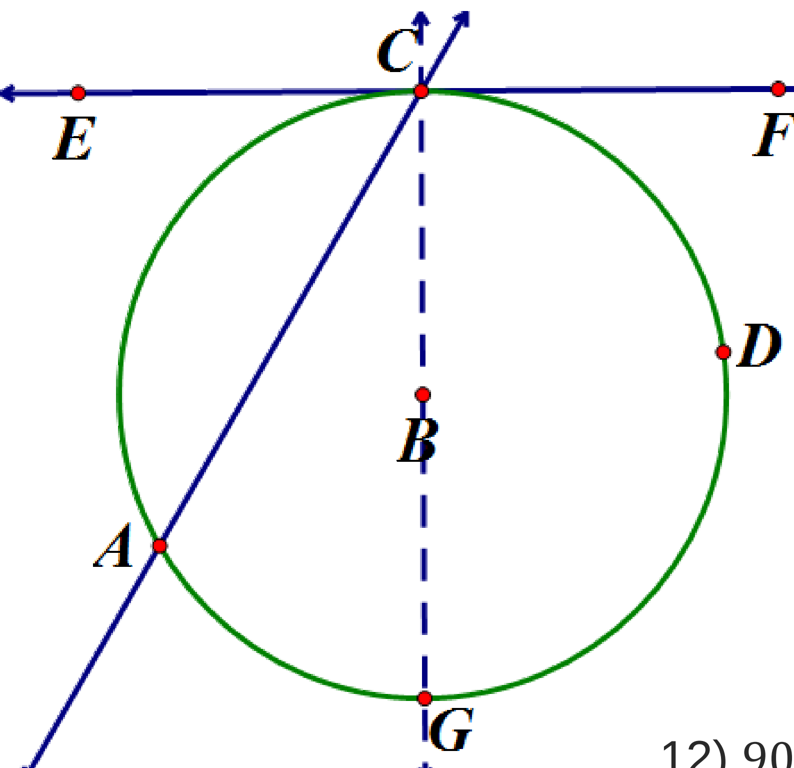
- Look at the following tangent and secant in ⊙*B*:



Statement	Reason
1) $\overleftrightarrow{EF}$ is a tan of ⊙B $\overleftrightarrow{AC}$ is a sec of ⊙B	1) Given
2) $m\angle ACG = \frac{1}{2} m\, AG$	2) The measure of an inscribed angle is $\frac{1}{2}$ its intercepted arc.
3) $\overline{BC} \perp \overline{EF}$	3) If a line is tan to a circle, then it is ⊥ at the point of tangency.
4) $\angle ECG\ is\ a\ rt\ \angle$	4) Def ⊥
5) $m\angle ECG = m\angle ECA + m\angle ACG$	5) ∠ + Post.

Statement	Reason
13) $0 = m\angle ECA - \frac{1}{2} m\,AC$	13) - prop. of =
14) $\frac{1}{2} m\,AC = m\angle ECA$	14) + prop. of =

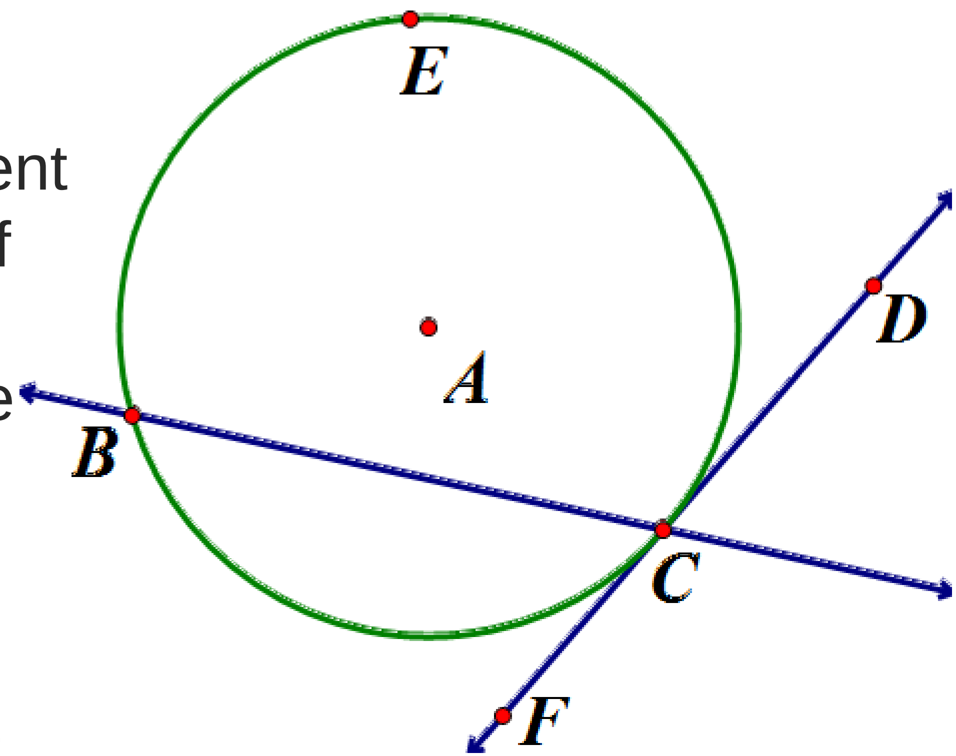
- Look at the fo… secant in $\odot B$:



Statement	Reason
1) $\overleftrightarrow{AB}$ is a tan of $\odot B$ $\overleftrightarrow{EF}$ is a sec of $\odot B$	1) Given
2) $m\angle ACG = \frac{1}{2} m\,AG$	2) The measure of an inscribed angle is $\frac{1}{2}$ its intercepted arc.
3) $\overline{BC} \perp \overline{EF}$	3) If a line is tan to a circle, then it is ⊥ at the point of tangency.
4) $\angle ECG$ is a rt $\angle$	4) Def ⊥
5) $m\angle ECG = m\angle ECA + m\angle ACG$	5) ∠ + Post.
6) $m\,AG + m\,AC = m\,CAG$	6) Arc + Post.
7) $m\,CAG = 180°$	7) Def. semicircle
8) $m\angle ECG = 90°$	8) Def Rt ∠
9) $90 = m\angle ECA + m\angle ACG$	9) Substitution
$m\,AG + m\,AC = 180°$	
10) $m\,AG = 180° - m\,AC$	10) Subtraction prop. of =
11) $m\angle ACG = 90° - \frac{1}{2} m\,AC$	11) Substitution
12) $90° = m\angle ECA + 90° - \frac{1}{2} m\,AC$	12) Substitution

§9-6 Secants, Tangents, & Angle Measures

- So that's a theorem!
  - If a secant and a tangent intersect at the point of tangency, then the measure of each angle formed is one-half the measure of its intercepted arc.
  - Draw a picture of what you think that means!

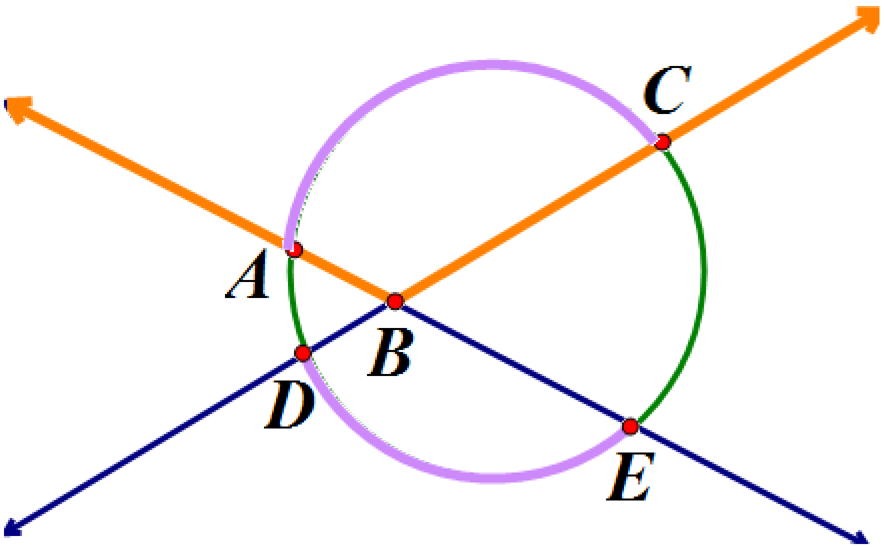


$$m\angle BCF = \frac{1}{2} BC$$

$$m\angle BCD = \frac{1}{2} BEC$$

§9-6 Secants, Tangents, & Angle Measures

- Another theorem:
  - If two secants intersect in the interior of a circle, then the measure of an angle formed is one-half the sum of the measures of the arcs intercepted by the angle and its vertical angle.
  - Draw it!

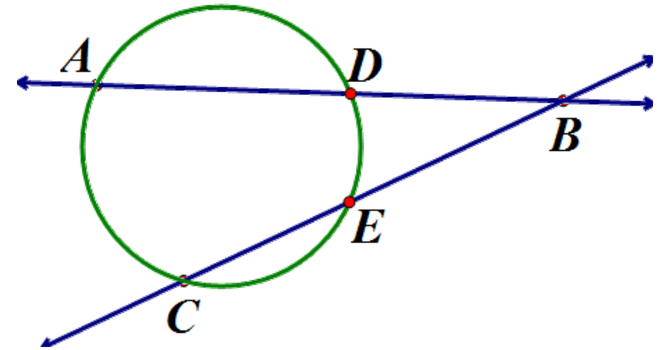


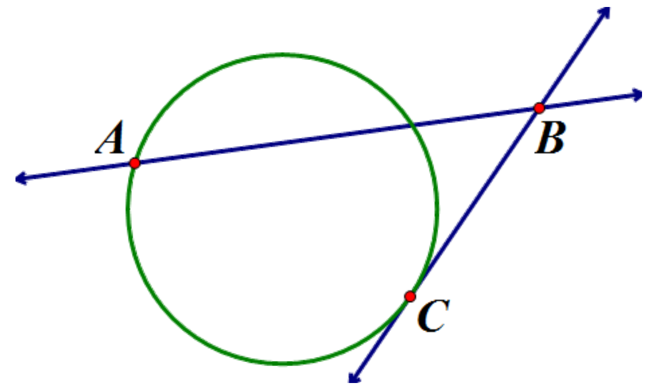
$$m\angle ABC = \frac{1}{2}(\,mAC \;+\; mDE\,)$$

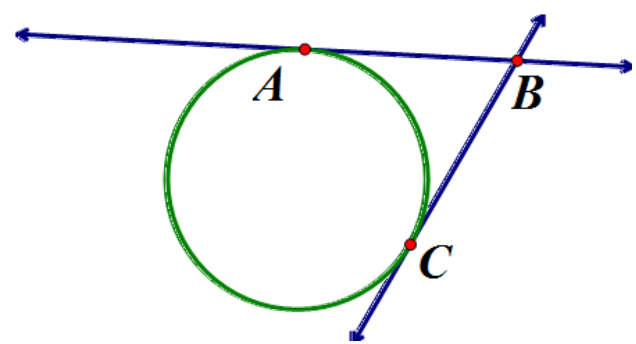
§9-6 Secants, Tangents, & Angle Measures

- This theorem is wordy, so take a moment to think about it before writing it out:
  - If two secants, a secant and a tangent, or two tangents intersect in the exterior of a circle, then the measure of the angle formed is one-half the positive difference of the measures of the intercepted arcs.

$m\angle ABC = \frac{1}{2}|(\qquad - \qquad)|$







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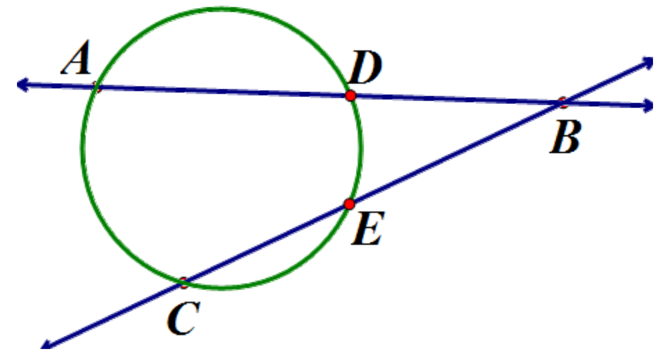

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$$m\angle ABC = \frac{1}{2}\left|\left(mAC - mDE \right)\right|$$

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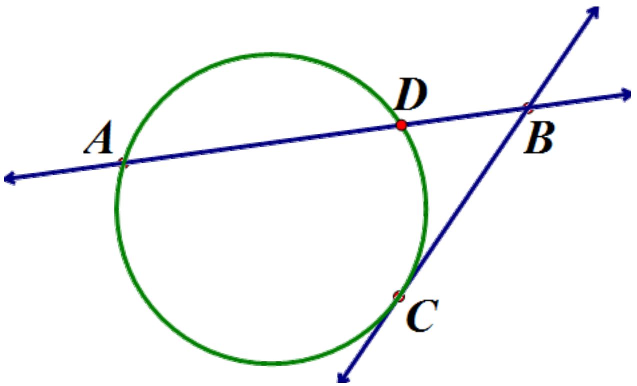

$$m\angle ABC = \frac{1}{2}\left|\left(mAC - mDC \right)\right|$$

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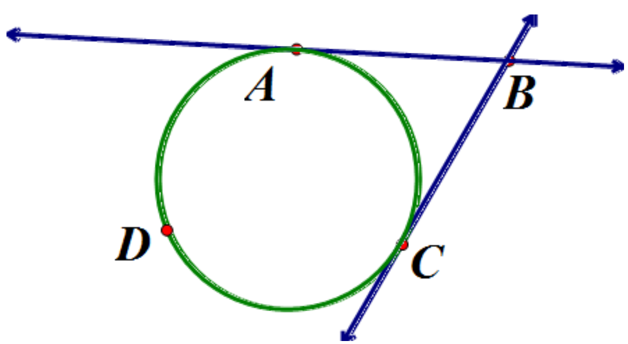
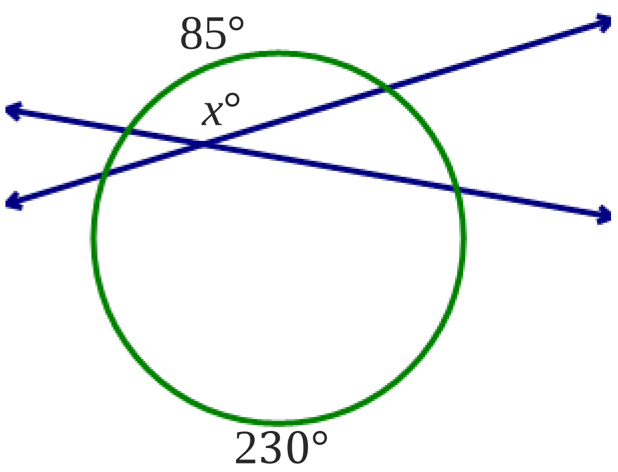
  - If two secants, a secant and a tangent, or two tangents intersect in the exterior of a circle, then the measure of the angle formed is one-half the positive difference of the measures of the intercepted arcs.

$$m\angle ABC = \frac{1}{2}\left|\left(m\overset{\frown}{ADC} - m\overset{\frown}{AC}\right)\right|$$



§9-6 Secants, Tangents, & Angle Measures

- Examples
  - Find the value of *x*.



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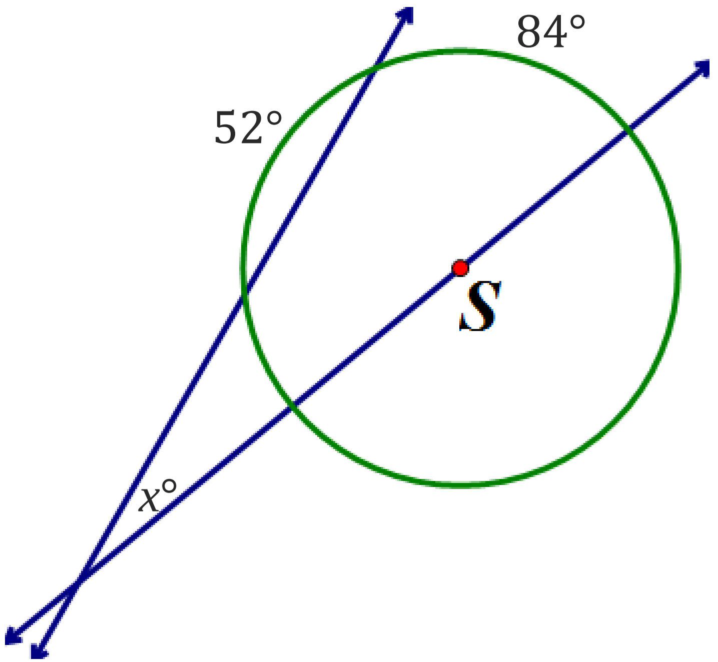

§9-6 Secants, Tangents, & Angle Measures

- Summarize the theorems about secants, tangents, and the angles and arcs formed.