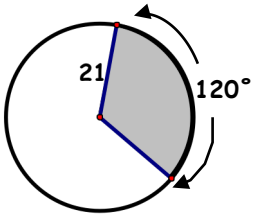
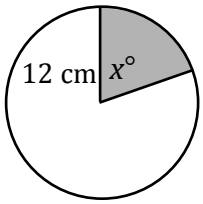
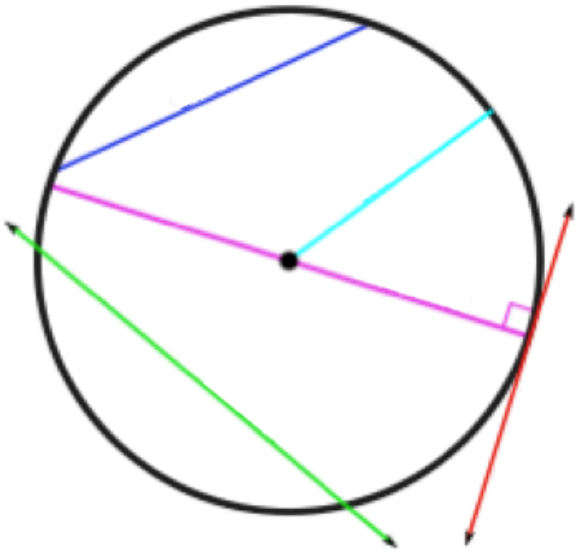
Circles & their Angles

Warm Up

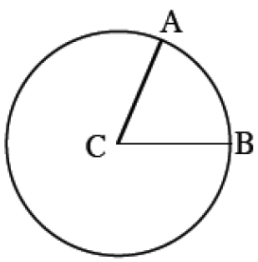
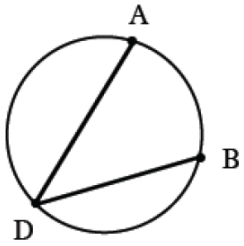
1. A_{sector} = _____ Arc length = _____ 	2. Find the degree measure of the arc of a sector with area 36π if the area of the circle is 144π.	3. The shaded area of the circle below is 24π in^2, and the radius is 12 cm. Find *x*. 

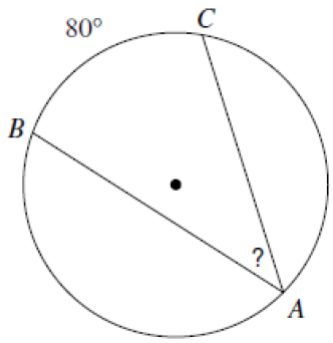
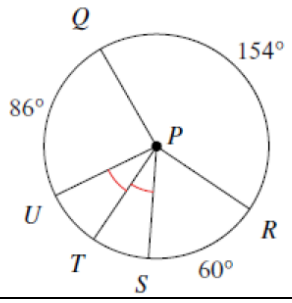
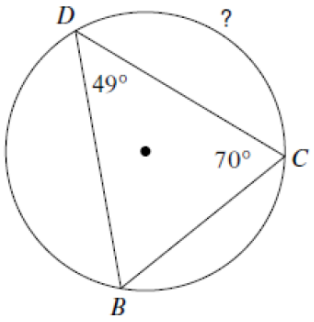
Vocab

Label the following circle with diameter, radius, chord, tangent, and secant.



(When these lines intersect, special angle/arc relationships occur.)

Central Angles:	Inscribed Angles:
	

1.	2.	3.
	$m\angle SPQ$ 	

Discovery Activity

Goal: Create a "Angles Formed by Secants, Tangents, & Chords" Booklet

This will be graded as a quiz!

Supplies you'll need:

- at least 3 half-sheet papers
- compass
- protractor
- pencils & colored pencils

Page 1: "Tangent & Chord Meeting On the Circle"

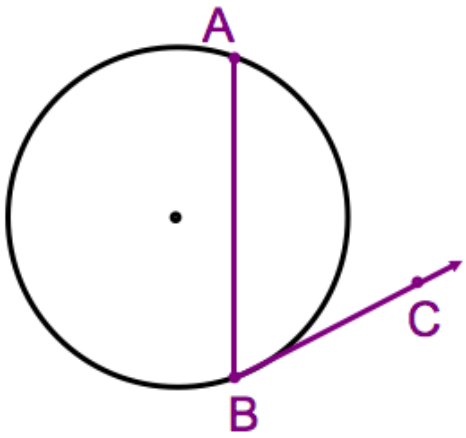
1.) Draw a circle on the half sheet and make a dot at the center.

2.) Draw a random chord through your circle with endpoints A and B.

3.) Create a tangent line from the chord's endpoints B in one direction.

4.) Measure the arc intercepted AB by the chord by measuring the central angle. (Use dashed line for all central angle measuring!)

_____



5.) Measure the angle ABC created between the chord and the tangent line. _____

6.) Divide the intercepted arc AB by 2.

_____

7.) What is the relationship between the intercepted arc of a chord and the angle formed by a tangent?

Page 2: "Two Secants Meeting Outside the Circle"

1.) Draw a circle on the half sheet and make a dot at the center.

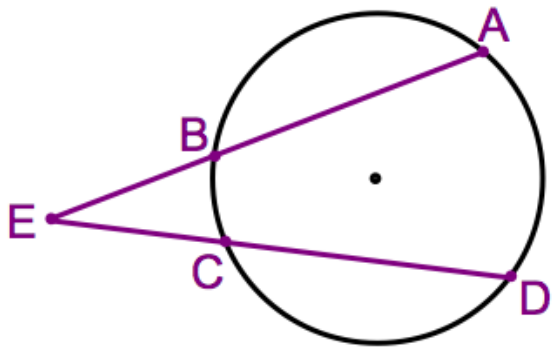
2.) Draw two secant lines through the circle that meet at the outside of the circle. Label A, B, C, D, and E according to the following picture.

3.) Measure the arc AD using the central angle. _____

4.) Measure the arc BC using the central angle. _____

5.) Measure the angle BEC. _____

6.) Compute (arc AD – arc BC)/2. _____



7.) What is the relationship between the angle created by two secants meeting outside the circle and the two intercepted arcs of the secants?

Page 3: "Secant & Tangent Meeting Outside the Circle"

1.) Draw a circle on the half sheet and make a dot at the center.

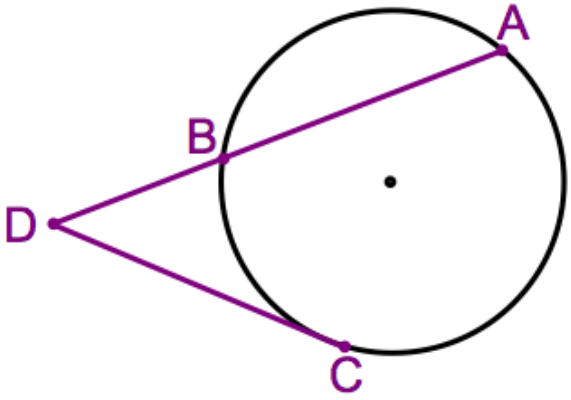
2.) Draw one secant lines through the circle and one tangent line that meet at the outside of the circle. Label A, B, C, and D according to the following picture.

3.) Measure the arc AC using the central angle. _____

4.) Measure the arc BC using the central angle. _____

5.) Measure the angle BDC. _____

6.) Compute (arc AC – arc BC)/2. _____



7.) What is the relationship between the angle created by a secant and a tangent meeting outside the circle and the two intercepted arcs of the lines?

Page 4: "Two Tangents Meeting Outside the Circle"

1.) Draw a circle on the half sheet and make a dot at the center.

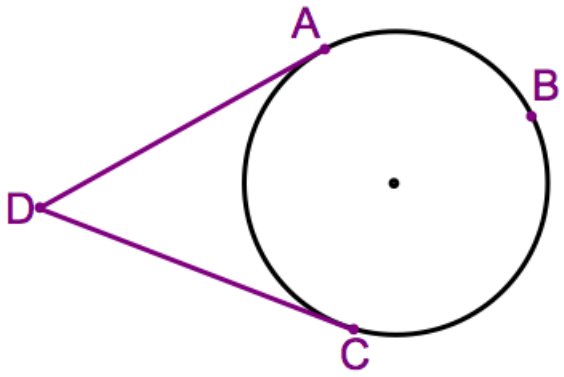
2.) Draw two tangent line that meet at the outside of the circle. Label A, B, C, and D according to the following picture.

3.) Measure the arc AC using the central angle. _____

4.) Measure the arc ABC using the central angle (or 360 rule). _____

5.) Measure the angle ADC. _____

6.) Compute (arc ABC – arc AC)/2. _____



7.) What is the relationship between the angle created by two tangent lines meeting outside the circle and the two intercepted arcs of the lines?

Page 5: "Two Secants Meeting Inside the Circle"

1.) Draw a circle on the half sheet and make a dot at the center.

2.) Draw two secant lines that meet within the circle, but not at the center. Label A, B, C, D, and E according to the following picture.

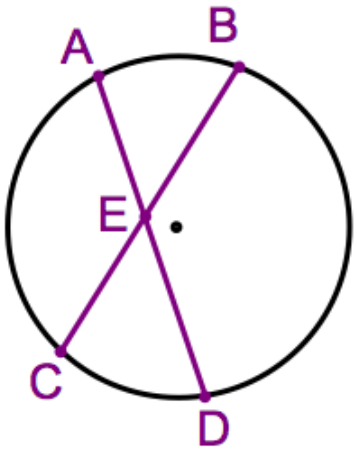
3.) Measure the arc AB using the central angle. _____

4.) Measure the arc CD using the central angle. _____

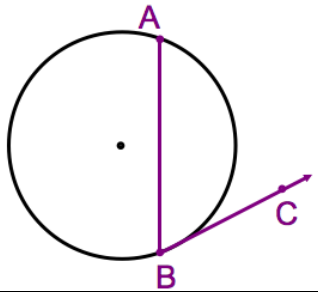
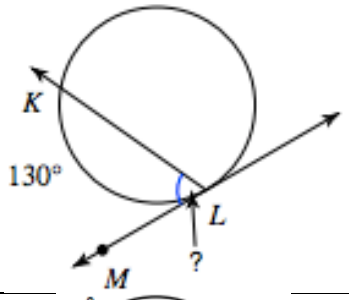
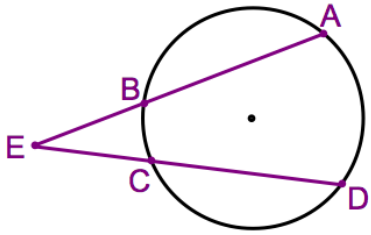
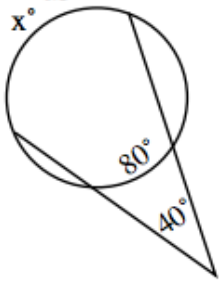
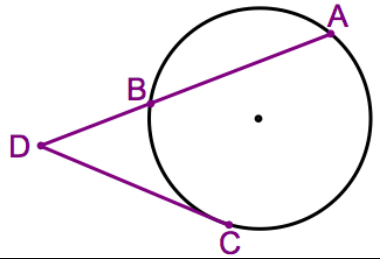
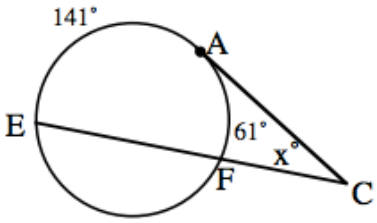
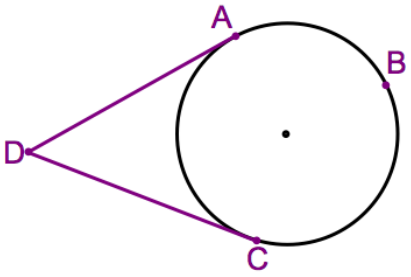
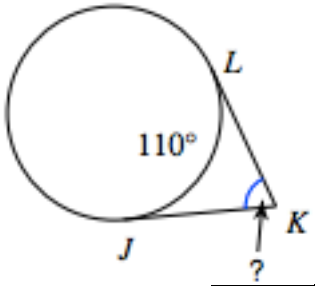
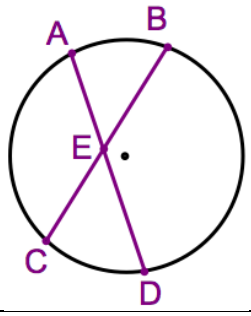
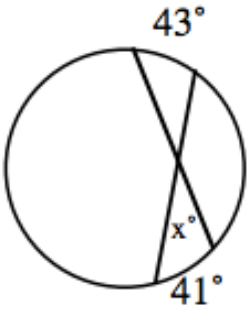
5.) Measure the angle AEB = _____

6.) Compute (arc AB + arc CD)/2. _____

7.) What is the relationship between the angle created by two secant lines meeting inside the circle and the two intercepted arcs of the lines?



Recap

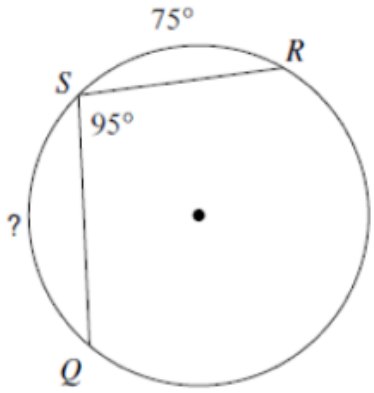
	**Tangent & Chord Meeting On the Circle**	**Ex:** 
	**Two Secants Meeting Outside the Circle**	
	**Secant & Tangent Meeting Outside the Circle**	
	**Two Secants Meeting Outside the Circle**	
	**Two Secants Meeting Inside the Circle**	

Homework!

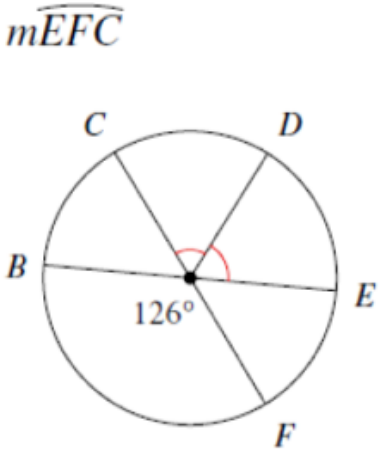
Inscribed / Central Angles: Find the values of the missing arc, (?) or find x.

1)

2)

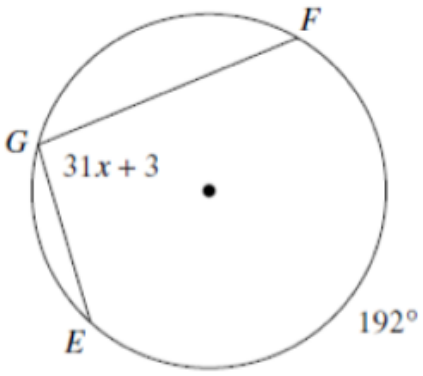


3)

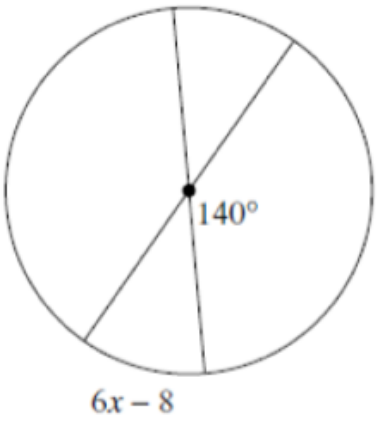


4)

5)

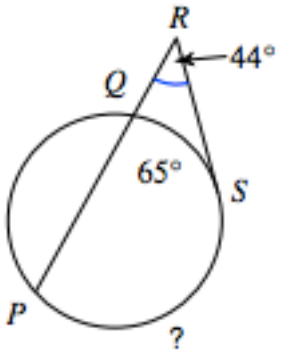


6)

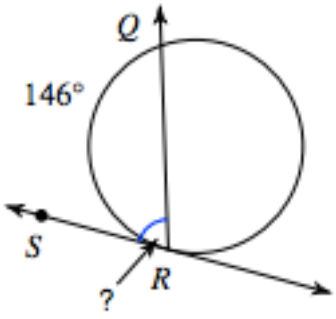


Secants, Tangents, & Chords: Find the values of the missing value (?) or find x.

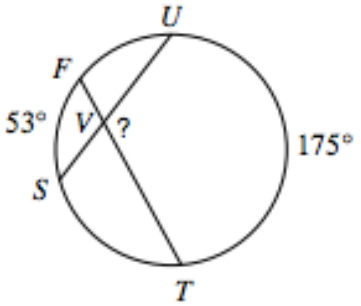
1.



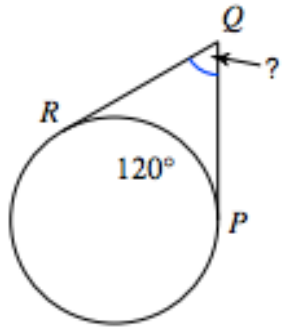
2.



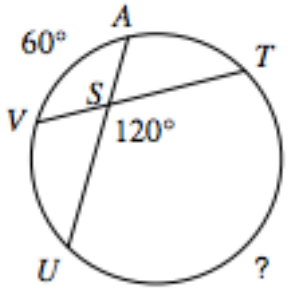
3.



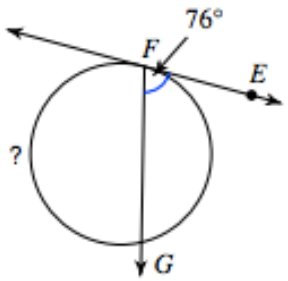
4.



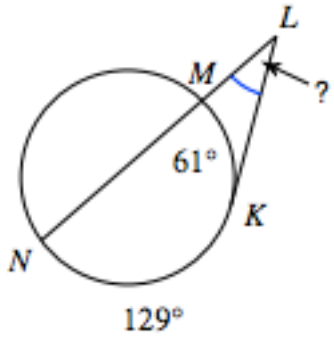
5.



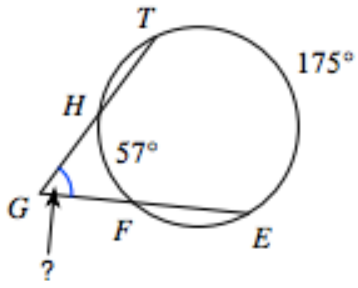
6.



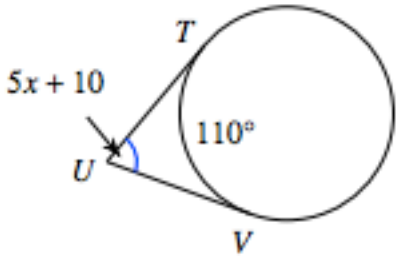
7.



8.



9.



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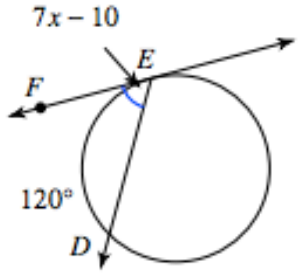

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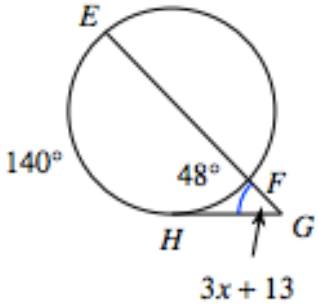
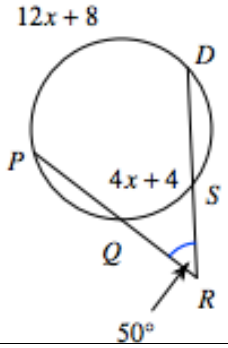
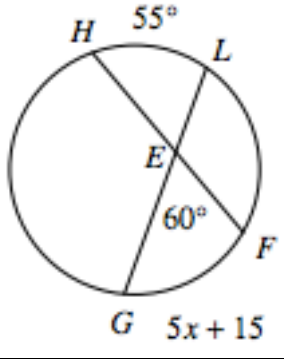


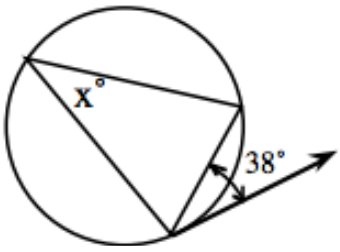
12.



13.



14.



15.