

### Secants, Tangents, & Angle Measures

Today we will be examining the measures of angles formed by intersecting secants and tangents in relation to intercepted arcs.

### Intersecting Tangents And Angle Measures

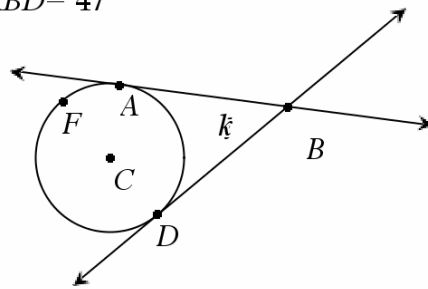
On page 1.4 line  $k$  is tangent to circle  $C$  at point  $A$  and line  $l$  is tangent to circle  $C$  at point  $D$ .

### Intersecting Tangents And Angle Measures

On page 1.4 move point  $A$  around circle  $C$ . Observe the effect on the measures of arc  $AFD$  and arc  $AD$ . Also, note the resulting measure of  $\angle ABD$ .

Put a conjecture in your notes about

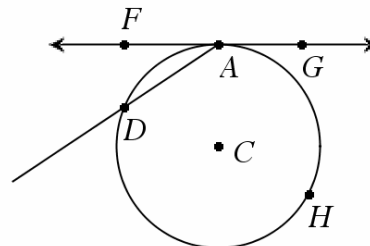
measure of arc  $AFD = 227^\circ$   
 measure of arc  $AD = 133^\circ$   
 $m\angle ABD = 47^\circ$



### Secant And Tangent Intersect At The Point Of Tangency And The Resulting Angle Measures

On page 1.6 move point  $D$  around circle  $C$ . Observe the effect on the measures of arc  $AHD$  and arc  $AD$ . Also, note the effects on the measures of  $\angle FAD$  and  $\angle GAD$ .

$m\angle FAD = 34^\circ$   
 measure of arc  $AD = 67^\circ$



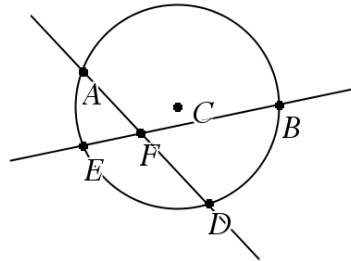
$m\angle GAD = 146^\circ$   
 measure of arc  $AHD = 293^\circ$

### Secants Intersecting Inside Of A Circle And The Resulting Angle Measures

On page 1.8 move points A, B, D, and/or E around circle C. Observe the effect on the measures of arc AE and arc BD. Also, note the effects on the measures of  $\angle AFE$  and  $\angle BFD$ .

$$m\angle AFE = 58^\circ \quad \text{measure of arc } AE = 43^\circ$$

$$m\angle BFD = 58^\circ \quad \text{measure of arc } BD = 74^\circ$$



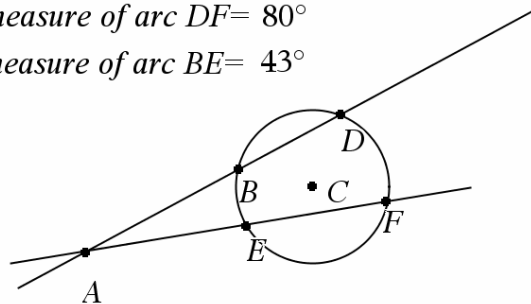
### Secants Intersecting Outside Of A Circle And The Resulting Angle Measures

On page 1.10 move points B, D, E and/or F around circle C. When you move them, try to keep Point A visible on the screen.

$$m\angle DAF = 19^\circ$$

$$\text{measure of arc } DF = 80^\circ$$

$$\text{measure of arc } BE = 43^\circ$$



### A Secant And A Tangent Intersecting Outside Of A Circle And The Resulting Angle Measures

On page 1.12 move points B, D, and/or F around circle C. When you move them, try to keep Point A visible on the screen.

$$m\angle DAF = 29^\circ$$

$$\text{measure of arc } DF = 154^\circ$$

$$\text{measure of arc } BF = 96^\circ$$

