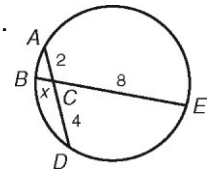
15-4 Segment Relationships in Circles

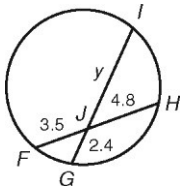
For each figure, determine the value of the variable and the indicated lengths by applying the Chord-Chord Product Theorem.

1. 

$x =$ _____

$AD =$ _____

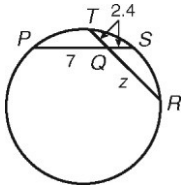
$BE =$ _____

2. 

$y =$ _____

$FH =$ _____

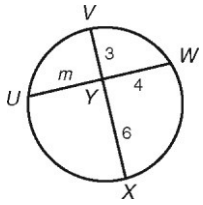
$GI =$ _____

3. 

$z =$ _____

$PS =$ _____

$RT =$ _____

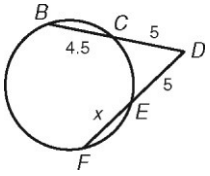
4. 

$m =$ _____

$UW =$ _____

$VX =$ _____

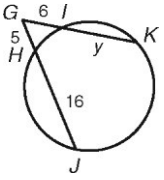
For each figure, determine the value of the variable and the indicated lengths by applying the Secant-Secant Product Theorem.

5. 

$x =$ _____

$BD =$ _____

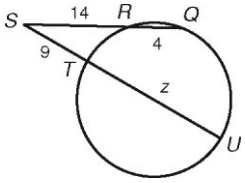
$FD =$ _____

6. 

$y =$ _____

$GJ =$ _____

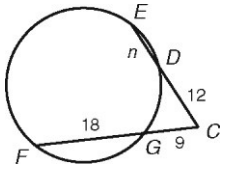
$GK =$ _____

7. 

$z =$ _____

$SQ =$ _____

$SU =$ _____

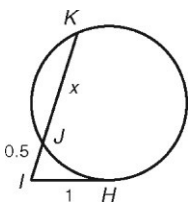
8. 

$n =$ _____

$CE =$ _____

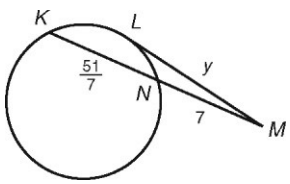
$CF =$ _____

For each figure, determine the value of the variable and the indicated length by applying the Secant-Tangent Product Theorem.

9. 

$x =$ _____

$IK =$ _____

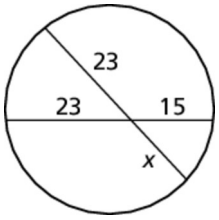
10. 

$y =$ _____

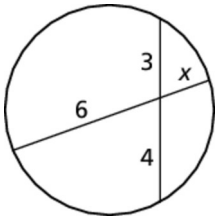
$KM =$ _____

In Exercises 11–28, find the value of *x*.

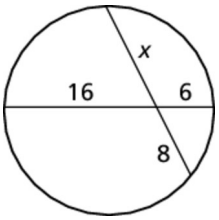
11.



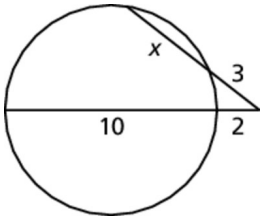
12.



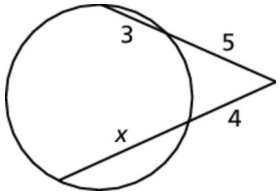
13.



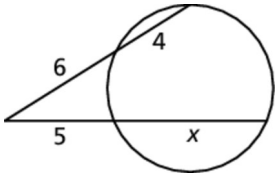
14.



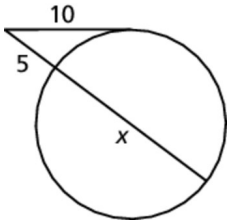
15.



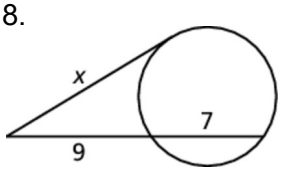
16.



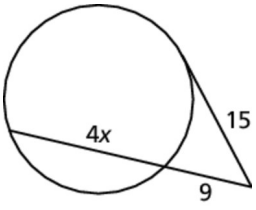
17.



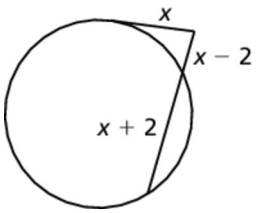
18.



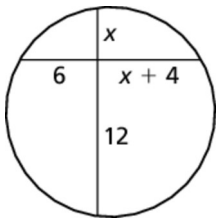
19.



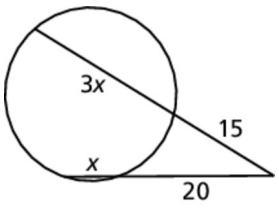
20.



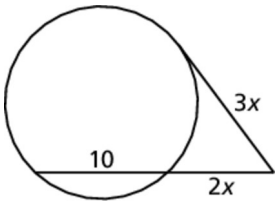
21.



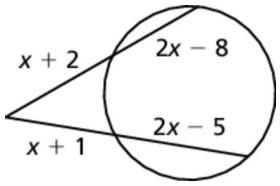
22.



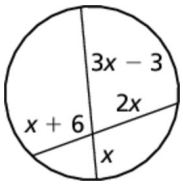
23.



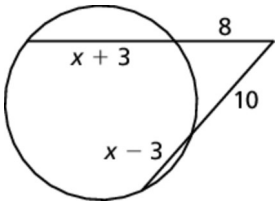
24.



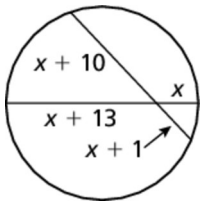
25.



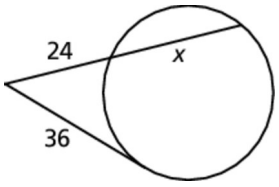
26.



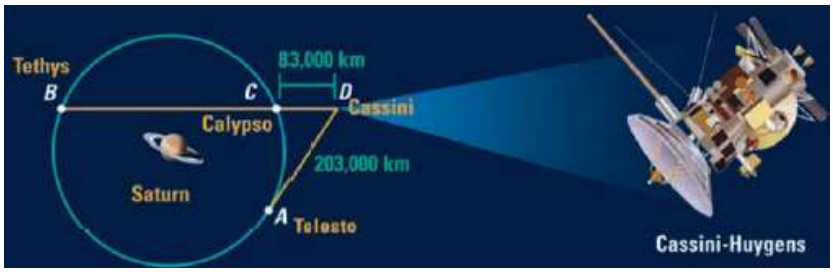
27.



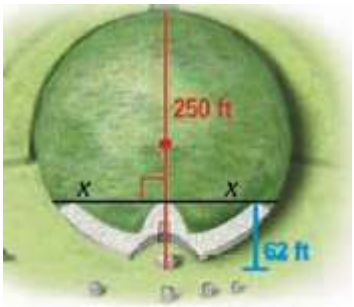
28.



29. Tethys, Calypso, and Telesto are three of Saturn's moons. Each has a nearly circular orbit 295,000 kilometers in radius. The Cassini-Huygens spacecraft entered Saturn's orbit in July 2004. Telesto is on a point of tangency. Find the distance *DB* from Cassini to Tethys.



30. The circular stone mound in Ireland called Newgrange has a diameter of 250 feet. A passage 62 feet long leads toward the center of the mound. Find the perpendicular distance *x* from the end of the passage to either side of the mound.



16. Tangent $\overleftrightarrow{PF}$ and secants $\overleftrightarrow{PD}$ and $\overleftrightarrow{PB}$ are drawn to circle *A*. Determine whether each of the following relationships is true or false. Select the correct answer for each lettered part.

	True	False
a. $PB \cdot EB = PD \cdot DC$		
b. $PE \cdot EB = PC \cdot DC$		
c. $PB \cdot PE = PF^2$		
d. $PB \cdot DC = PD \cdot EB$		
e. $PB \cdot PE = PD \cdot PC$		
f. $PB \cdot PE = PF \cdot PC$