15.2 and 15.3

Each quadrilateral described is inscribed in a circle. Determine the angle measures.

1. Quadrilateral *ABCD* has m∠*A* = 53° and m∠*B* = 82°.

m∠*C* =   m∠*D* =

2. Quadrilateral *RSTU* has m∠*S* = 104° and m∠*T* = 55°.

m∠*R* =   m∠*U* =

3. Quadrilateral *JKLM* has m∠*J* = 90° and ∠*K* ≅ ∠*M*.

m∠*K* =   m∠*L* =   m∠*M* =

4. Quadrilateral *RSTU* has m∠*S* = 35° and m∠*T* = 120°.

m∠*R* =   m∠*U* =

Determine whether each quadrilateral can be inscribed in a circle. If it cannot be determined, say so.

5.

118° 107°
62°

6.

124°
58°

7.

63°

8.
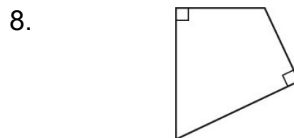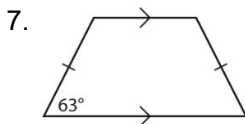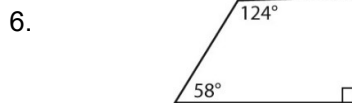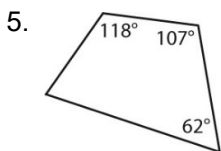
For each inscribed quadrilateral, determine the angle measures.

9.

Y (8*x* + 21)°
X
(10*x* − 1)°
Z
(7*x* − 6)°
W

m∠*X* =

m∠*Y* =

m∠*Z* =

m∠*W* =

10.

D
C
Q
E
F

m∠*C* =

m∠*D* =

m∠*E* =

m∠*F* =

11.

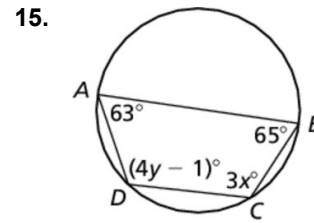*U*
(14*z* − 7)° *V*
T 8*z*°
10*z*°
W

m∠*T* =

m∠*U* =

m∠*V* =

m∠*W* =

12.

N
(*a* + 16)°   *M*
(*a* + 30)°
(*a* − 18)° *L*
K

m∠*K* =

m∠*L* =

m∠*M* =

m∠*N* =
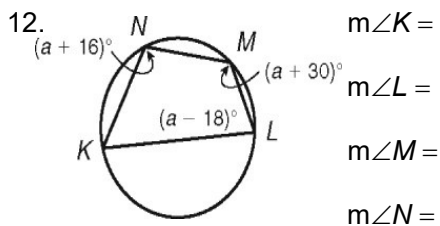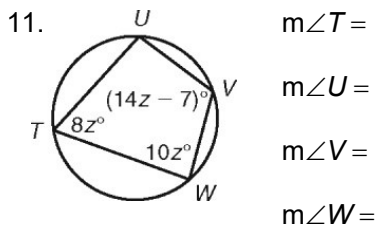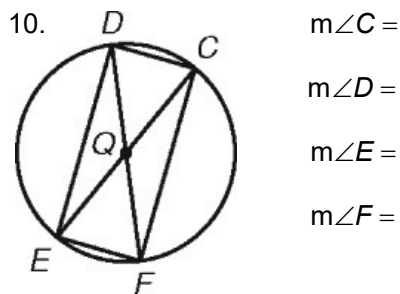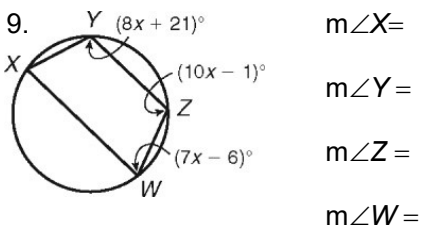
In Exercises 13-15, find the value of each variable.

13.

14.

15.
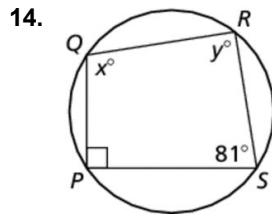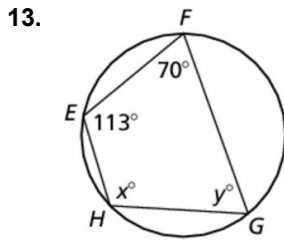
16. Determine whether $\overline{AB}$ is a diameter of the circle. Explain your reasoning.
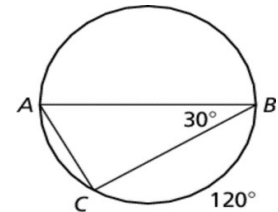
Find each indicated measure for ⊙M.

17. a. $m\widehat{EF}$

   b. $m\angle E$

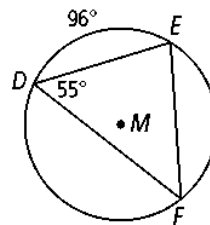   **c.** $m\angle F$
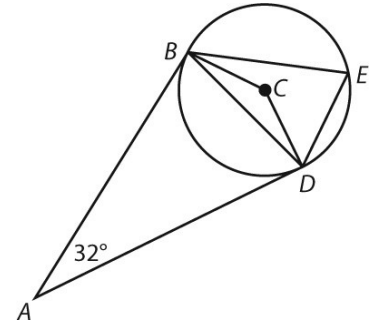
   d. $m\widehat{DF}$

Find the values of the variables.	
18.	**19.**
20.	**21.** $m\angle T$ $m\angle Z$
22. $m\angle H$ $m\angle G$	**23.** $m\angle D$ and $m\angle B$

Refer to the figure for Problems 1–4. $\overline{AB}$ **is tangent to** $\odot C$ **at point B and** $\overline{AD}$ **is tangent to** $\odot C$ **at point B. Determine the angle measures.**
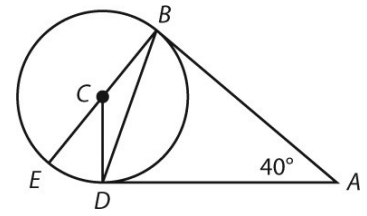
1. m∠ABC = _____   2. m∠DCB =

3. m∠BDA = _____   4. m∠CDB = _____

Refer to the figure for Problems 5–8. $\overline{AB}$ **is tangent to** $\odot C$ **at point B and** $\overline{AD}$ **is tangent to** $\odot C$ **at point B. Determine the angle measures.**
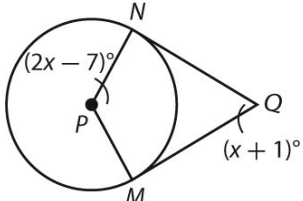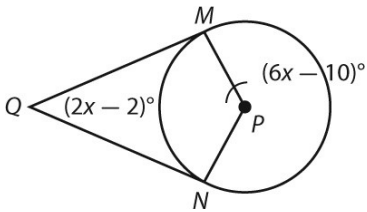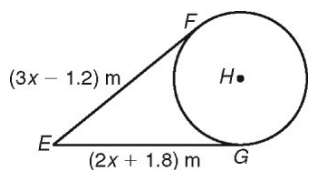
5. m∠BCD = _____   6. m∠CDA = _____
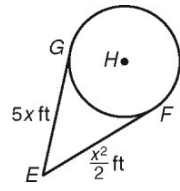
7. m∠BED = _____   8. m∠DBA = _____

In Problems 9 and 10, $\overline{QM}$ **is tangent to** $\odot P$ **at point M and** $\overline{QN}$ **is tangent to** $\odot P$ **at point P. Solve for the variable and determine the angle measures.**

9.

$x =$ _____   m∠NQM = _____

$(2x - 7)°$

$(x + 1)°$ m∠PNQ = _____   m∠NPM = _____

10.

$x =$ _____   m∠MQN = _____

$(6x - 10)°$

$(2x - 2)°$

m∠QMP = _____   m∠NPM = _____

In Problems 11 and 12, $\overline{EF}$ **is tangent to** $\odot H$ **at point F and** $\overline{EG}$ **is tangent to** $\odot H$ **at point G. Determine the length of** $\overline{EF}$.

11. $EF =$

$(3x - 1.2)$ m

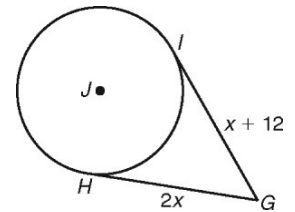$(2x + 1.8)$ m   G

12. $EF =$

$5x$ ft

$\frac{x^2}{2}$ ft

In Exercises 13 - 14, find the value of x

13.

14.
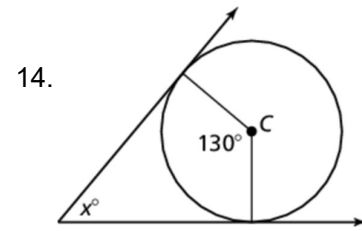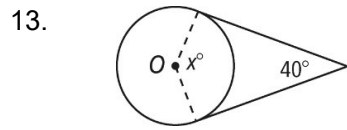
Refer to the figure for Problems 15 - 18. $\overline{GH}$ is tangent to $\odot J$ at point H and $\overline{GI}$ is tangent to $\odot J$ at point I. Answer the questions to determine the length of $\overline{GH}$. The first one is done for you.
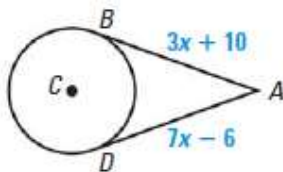

15. How are $\overline{GH}$ and $\overline{GI}$ related?
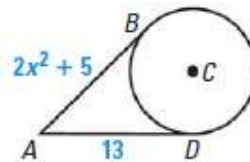
16. Write an equation to solve for x.

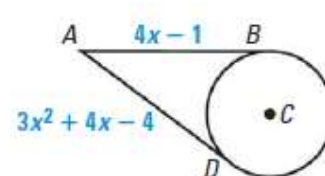17. Solve the equation. What is the value of x?

18. What is GH?

Find the value(s) of the variable

19.

20.

21.

Factor each trinomial.

1. $x^2 + 13x + 36$ 2. $x^2 + 11x + 24$ 3. $x^2 + 14x + 40$

7. $x^2 - 7x + 6$ 8. $x^2 - 9x + 14$ 9. $x^2 - 11x + 24$

13. $x^2 - x - 2$ 14. $x^2 - 3x - 18$ 15. $x^2 - 4x - 45$

19. $x^2 - 6x + 5$ 20. $x^2 - 9x + 18$ 21. $x^2 - 12x + 32$

Solve each quadratic equation by factoring.

26. $x^2 - 3x + 2 = 0$ 27. $x^2 - 4x + 3 = 0$

30. $x^2 - 6x + 5 = 0$ 31. $x^2 + 16x + 28 = 0$

32. $x^2 + 10x + 9 = 0$ 33. $x^2 - 12x + 32 = 0$

34. $x^2 + 13x + 42 = 0$ 35. $x^2 - 7x + 12 = 0$