

Using the Pythagorean Theorem to find the value of x in each of the diagrams below:

1. $5^2 + 12^2 = x^2$
 $25 + 144 = x^2$
 $169 = x^2$
 $x = 13$

$a^2 + 12^2 = 37^2$
 $a^2 + 144 = 1369$
 $-144 \quad -144$
 $\sqrt{a^2} = \sqrt{1225} \quad a = 35$

2. $12^2 + b^2 = 20^2$
 $144 + b^2 = 400$
 $-144 \quad -144$
 $b^2 = 256$
 $b = 16$
 $x = 16 - 5$
 $x = 11$

$x = 11$

Converse of the Pythagorean Theorem.
 Which of the following are right triangles?

3. $7^2 + 24^2 = 25^2$
 $49 + 576 = 625$
 $625 = 625$ ✓

Right Triangle? (circle one)
 YES NO

4. $4^2 + 5^2 = 6^2$
 $16 + 25 = 36$
 $41 = 36$ ✗

Right Triangle? (circle one)
 YES NO

5. $8^2 + (4\sqrt{5})^2 = 12^2$
 $64 + 80 = 144$
 $144 = 144$ ✓

Right Triangle? (circle one)
 YES NO

6. $8^2 + 15^2 = 17^2$
 $64 + 225 = 289$
 $289 = 289$ ✓

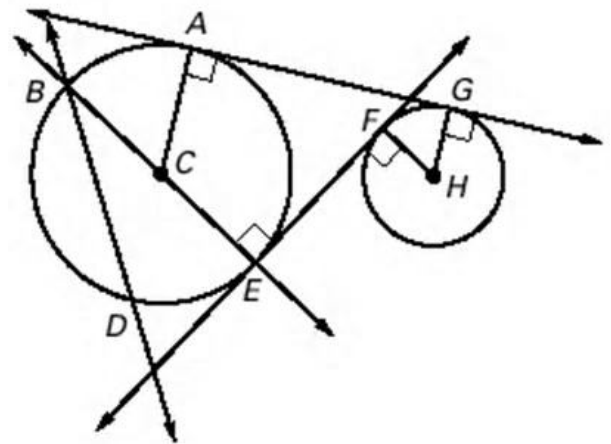
Right Triangle? (circle one)
 YES NO

7. $11^2 + 35^2 = 37^2$
 $121 + 1225 = 1369$
 $1346 = 1369$ ✗

Right Triangle? (circle one)
 YES NO

- E 8. F
- G 9. \overline{FE}
- D 10. \overline{HG}
- B 11. \overline{DB}
- A 12. C
- C 13. \overline{BE}
- H 14. \overleftrightarrow{DB}
- F 15. \overline{AG}

- A. Center
- B. Chord
- C. Diameter
- D. Radius
- E. Point of tangency
- F. Common external tangent
- G. Common internal tangent
- H. Secant



Tell whether \overline{AB} is tangent to $\odot C$. Explain your reasoning.

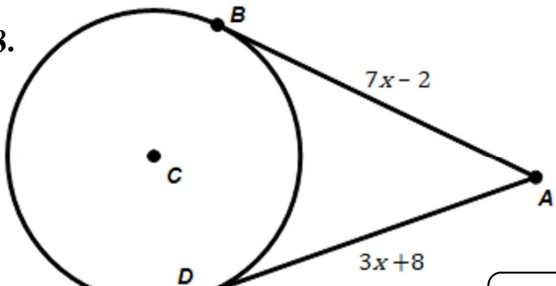
16. $8^2 + 12^2 = 17^2$
 $64 + 144 = 208$
 $208 \neq 289$ ✗

$\angle CAB$ IS NOT A RIGHT ANGLE BASED ON THE CONVERSE OF THE PYTHAGOREAN THEOREM. SO, \overline{AB} CAN NOT BE TANGENT

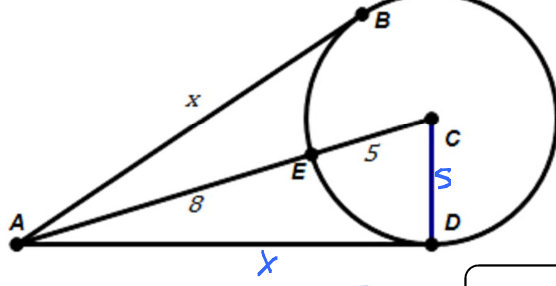
17. $7^2 + 24^2 = 25^2$
 $49 + 576 = 625$
 $625 = 625$ ✓

$\angle CAB$ MUST BE A RIGHT ANGLE BASED ON THE CONVERSE OF THE PYTHAGOREAN THEOREM. SO, \overline{AB} IS TANGENT TO CIRCLE WITH CENTER C

\overline{AB} and \overline{AD} are tangent to $\odot C$. Find the value of x .

18. 

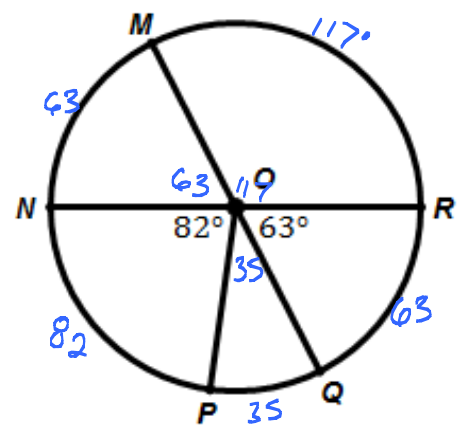
$7x-2 = 3x+8$
 $-3x \quad -3x$
 $\frac{4x-2}{+2} = \frac{+10}{+2}$
 $\frac{4x}{4} = \frac{10}{4}$
 $x = 2.5$

19. 

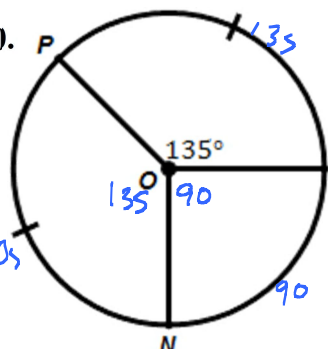
$5^2 + x^2 = 13^2$
 $25 + x^2 = 169$
 $-25 \quad -25$
 $x^2 = 144$
 $x = 12$

\overline{MQ} and \overline{NR} are diameters. Find the indicated measure.

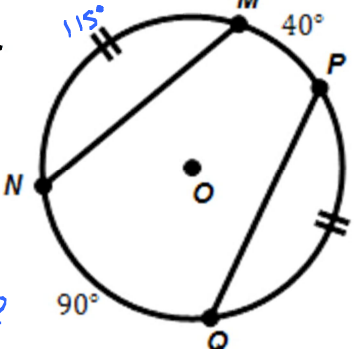
20. $m\widehat{MN} = 63^\circ$ 21. $m\widehat{NQ} = 117^\circ$
 22. $m\widehat{NQR} = 180^\circ$ 23. $m\widehat{MRP} = 215^\circ$
 24. $m\widehat{QR} = 63^\circ$ 25. $m\widehat{MR} = 117^\circ$
 26. $m\widehat{QMR} = 297^\circ$ 27. $m\widehat{PQ} = 35^\circ$
 28. $m\widehat{PRN} = 278^\circ$ 29. $m\widehat{MQN} = 297^\circ$



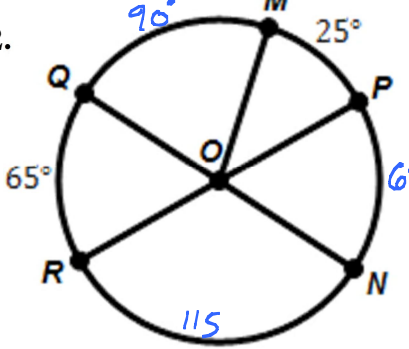
Find the measure of \widehat{MN} .

30. 

135°
 90°
 90°

31. 

40°
 90°
 $\frac{360-130}{2} = \frac{230}{2} = 115^\circ = m\widehat{MN}$

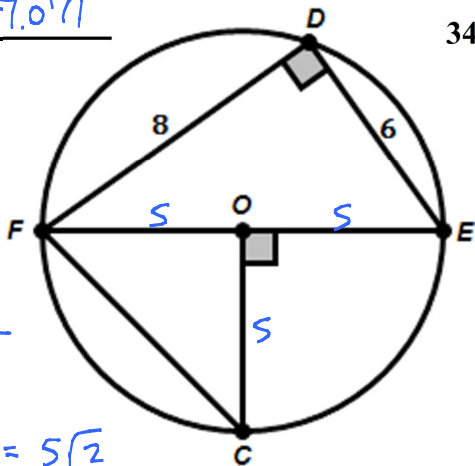
32. 

25°
 65°
 90°
 $m\widehat{MN} = 90^\circ$

Find the indicated measure for $\odot P$.

33. $FC = 5\sqrt{2} \approx 7.071$

$6^2 + 8^2 = c^2$
 $36 + 64 = c^2$
 $100 = c^2$
 $10 = c$
 $5^2 + 5^2 = c^2$
 $50 = c^2$
 $\sqrt{50} = c = 5\sqrt{2}$



34. $m\widehat{AE} = 80^\circ$

$180 - 100 = 80$

