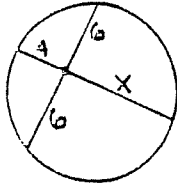


Geometry (H)
Section - Problems

KBY

Using the theorems we just proved and solve for x in the following problems.

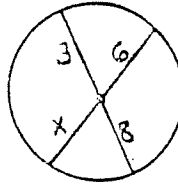
1.



$$4x = 36$$

$$x = 9$$

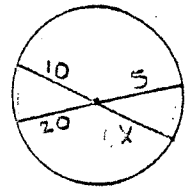
2.



$$6x = 24$$

$$x = 4$$

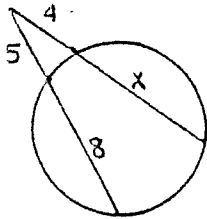
3.



$$10x = 100$$

$$x = 10$$

4.



$$4(4+x) = 5(8)$$

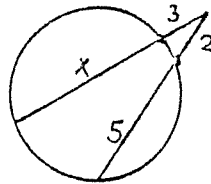
$$16 + 4x = 40$$

$$4x = 24$$

$$x = \frac{24}{4}$$

$$x = 6$$

5.



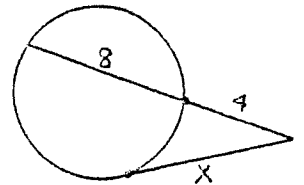
$$3(3+x) = 5(5)$$

$$9 + 3x = 25$$

$$3x = 16$$

$$x = \frac{16}{3}$$

6.



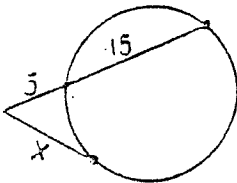
$$x^2 = 4(12)$$

$$x^2 = 48$$

$$x = \sqrt{16 \cdot 3}$$

$$x = 4\sqrt{3}$$

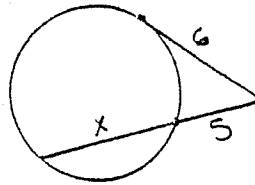
7.



$$x^2 = 5(20)$$

$$x = 10$$

8.



$$6^2 = 5(x+5)$$

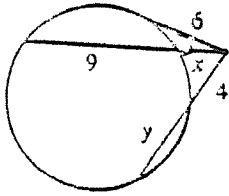
$$36 = 5x + 25$$

$$11 = 5x$$

$$x = \frac{11}{5}$$

9. Find each variable.

a.



$$6^2 = x(x+9)$$

$$36 = x^2 + 9x$$

$$0 = x^2 + 9x - 36$$

$$0 = (x+12)(x-3)$$

$$x = -12 \quad x = 3$$

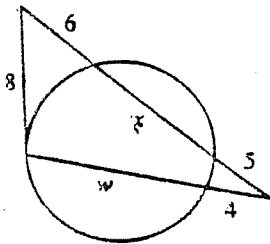
OMIT

$$4(y+4) = 3(12)$$

$$y+4 = 9$$

$$y = 5$$

b.



$$5(x+5) = 4(w+4)$$

$$5\left(\frac{14}{3} + \frac{15}{3}\right) = 4w + 16$$

$$5\left(\frac{29}{3}\right) - 16 = 4w$$

$$\frac{145}{3} - \frac{48}{3} = 4w$$

$$\frac{1}{4} \times \frac{97}{3} = w$$

$$\frac{97}{12} = w$$

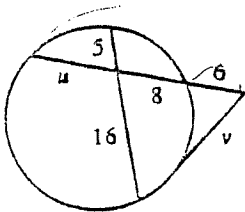
$$8^2 = 6(6+x)$$

$$64 = 36 + 6x$$

$$28 = 6x$$

$$x = \frac{14}{3}$$

c.



$$v^2 = 6(14+u)$$

$$v^2 = 6(24)$$

$$v^2 = 144$$

$$v = 12$$

$$8u = 5(16)$$

$$8u = 80$$

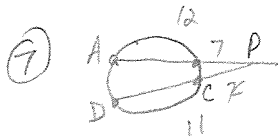
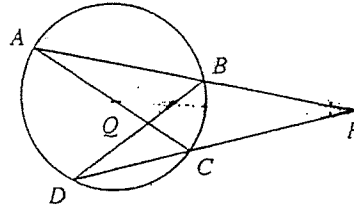
$$u = 10$$

Geometry (H)
Section 3 - Problems

KEY

Note: #12 & 13 - only 1 answer!

7. $AP = 12, PB = 7, PD = 11$ Find PC .
8. $AQ = 8, QC = 3, BQ = 5$ Find QD .
9. $AB = 9, BP = 10, PD = 18$ Find CD .
10. $AC = 12, AQ = 8, BQ = 5$ Find BD .
11. $AB = 8, AP = 17, CD = 7$ Find DP .
12. $BD = 18, AC = 14, CQ = 5$ Find BQ .
13. $AC = 15, BQ = 9, QD = 4$ Find AQ and CQ .

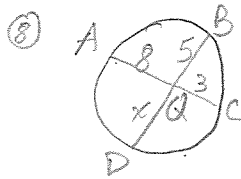


$$7(12) = 11x$$

$$84 = 11x$$

$$\frac{84}{11} = x$$

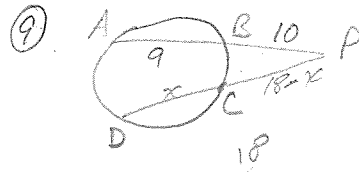
$$PC = \frac{84}{11}$$



$$3(8) = 5x$$

$$\frac{24}{5} = x$$

$$QD = \frac{24}{5}$$



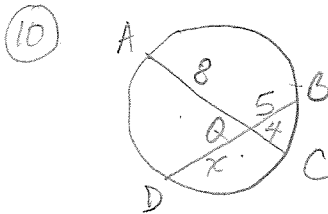
$$10(19) = 18(18-x)$$

$$190 = 324 - 18x$$

$$18x = 134$$

$$x = \frac{134}{18} = \frac{67}{9}$$

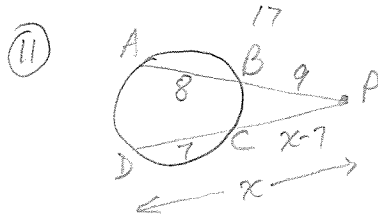
$$CD = \frac{67}{9}$$



$$32 = 5x$$

$$\frac{32}{5} = x$$

$$BD = 6\frac{2}{5} + 5 = 11\frac{2}{5}$$



$$9(17) = x(x-7)$$

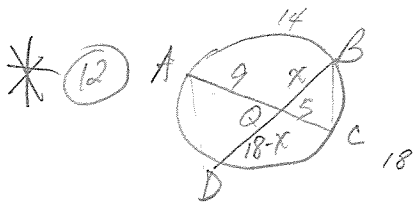
$$153 = x^2 - 7x$$

$$0 = x^2 - 7x - 153$$

$$x = \frac{7 \pm \sqrt{49 - 4(-153)}}{2}$$

$$x = \frac{7 \pm \sqrt{661}}{2}$$

$$DP = \frac{7 \pm \sqrt{661}}{2}$$



$$9(5) = x(18-x)$$

$$45 = 18x - x^2$$

$$x^2 - 18x + 45 = 0$$

$$(x-15)(x-3) = 0$$

$$x = 15, x = 3$$

omit

OK

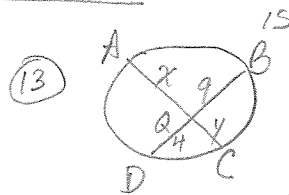
$$x = 15$$

$$9(5) = 15(3)$$

$$x = 3$$

$$9(5) = 3(15)$$

$$BQ = 3$$



$$9(4) = xy \quad x+y=15$$

$$36 = y(15-y) \quad x = 15-y$$

$$36 = 15y - y^2$$

$$y^2 - 15y + 36 = 0$$

$$y(y-12)(y-3) = 0$$

$$y = 12, y = 3$$

$$x = 3$$

$$y = 12$$

$$x = 12$$

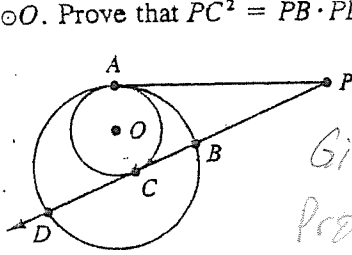
$$y = 3$$

omit

$$AQ = 12$$

$$CQ = 3$$

20. Suppose that \overline{PA} and \overline{PC} are both tangent to $\odot O$. Prove that $PC^2 = PB \cdot PD$.



* $\overline{PA} \cong \overline{PC}$

Given: \overline{PA} & \overline{PC} tangent to $\odot O$.

Prove: $PC^2 = PB \cdot PD$

① \overline{PA} & \overline{PC} tangent to $\odot O$. \rightarrow ② $\overline{PA} \cong \overline{PC} \rightarrow$ ③ $PA = PC$ } \rightarrow ⑤
 ④ $PA^2 = PB \cdot PD$ } $PC^2 = PB \cdot PD$

① Given

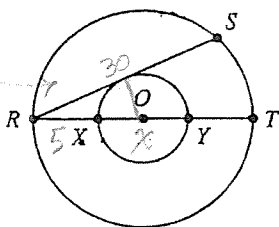
② 2 tangents to same \odot
 from same exterior pt
 are \cong .

③ def of \cong seg.

④ tangent² = (secant seg)(exterior sec.)

⑤ substitution

23. In the figure O is the center of two concentric circles. \overline{RS} is tangent to the smaller circle. If $RX = 5$ and $RS = 30$, find XY .



draw \perp ,
 bisects
 chord

let $x = XY$

$\tan^2 = (\text{ext})(\text{sec})$

$15^2 = (5)(5+x)$

$225 = 25 + 5x$

$200 = 5x$

$40 = x$

$XY = 40$

