

1. A chord is 7cm from the center. The diameter is 50 cm. Find the length of the chord.



radius = 25
 $7^2 + b^2 = 25^2$
 $49 + b^2 = 625$
 $b^2 = 576$
 $b = 24$

$24(2) = 48 \text{ cm}$

2. A 12 cm chord is 8 cm from the center. Find the length of the radius of the circle.

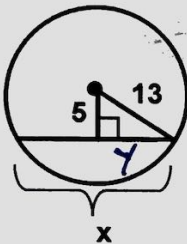


$8^2 + 6^2 = r^2$
 $64 + 36 = r^2$
 $100 = r^2$

radius = 10 cm

Find the length of the segments indicated. Assume that segments that appear to be tangent are tangent.

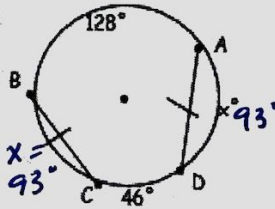
3.



$5^2 + y^2 = 13^2$
 $25 + y^2 = 169$
 $y^2 = 144$
 $y = 12$

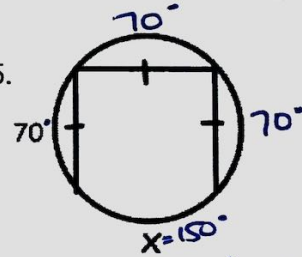
Length of chord
 $= 2(12) = 24$

4.



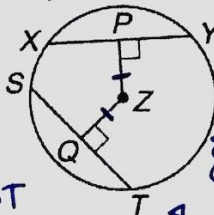
$x + x + 128 + 46 = 360$
 $2x + 174 = 360$
 $2x = 186$
 $x = 93^\circ$

5.



$3(70^\circ) + x = 360$
 $210 + x = 360$
 $x = 150^\circ$

6. In circle Z, $PZ = QZ$,
 $XY = 4x - 5$, and $ST = -5x + 13$.
 Find SQ .



plug x into ST

$ST = -5(2) + 13$

$ST = 3$

$SQ = 3(\frac{1}{2})$

$SQ = 1.5$

$XY = ST$

$4x - 5 = -5x + 13$

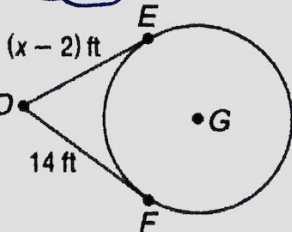
$+5x \quad +5x$

$9x - 5 = 13$

$9x = 18$

$x = 2$

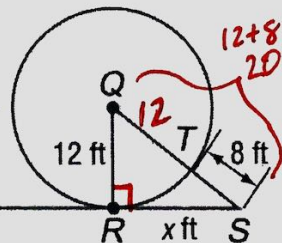
9.



$x - 2 = 14$

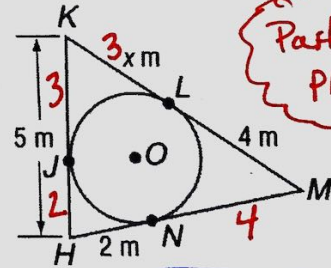
$x = 16 \text{ ft.}$

7.



$12^2 + x^2 = 20^2$
 $144 + x^2 = 400$
 $x^2 = 256$
 $x = 16$

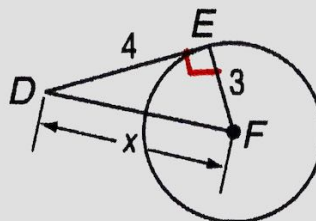
8.



Pasty Hat Problem

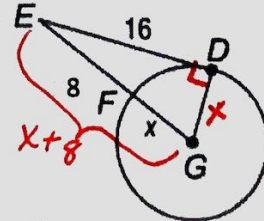
$x = 3 \text{ m}$

10.

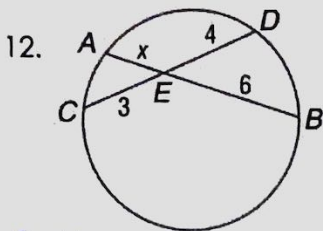


$4^2 + 3^2 = x^2$
 $16 + 9 = x^2$
 $25 = x^2$
 $x = 5$

11.



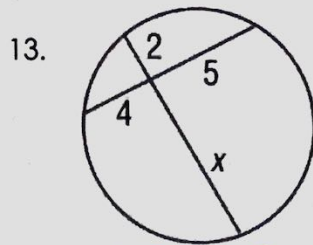
$x^2 + 16^2 = (x+8)^2$
 $x^2 + 256 = (x+8)(x+8)$
 $x^2 + 256 = x^2 + 8x + 8x + 64$
 $256 = 16x + 64$
 $192 = 16x$
 $x = 12$



$$6 \cdot x = 3 \cdot 4$$

$$6x = 12$$

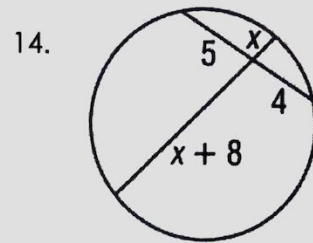
$$\boxed{x = 2}$$



$$x \cdot 2 = 4 \cdot 5$$

$$2x = 20$$

$$\boxed{x = 10}$$



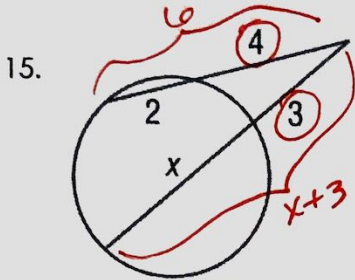
$$x(x+8) = 5 \cdot 4$$

$$x^2 + 8x = 20$$

$$x^2 + 8x - 20 = 0$$

$$(x-2)(x+10) = 0$$

$$\boxed{x = 2}$$

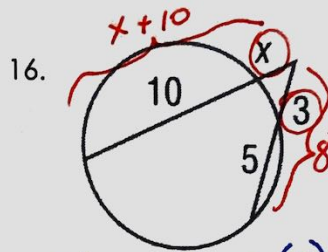


$$4 \cdot 6 = 3(x+3)$$

$$24 = 3x + 9$$

$$15 = 3x$$

$$\boxed{x = 5}$$



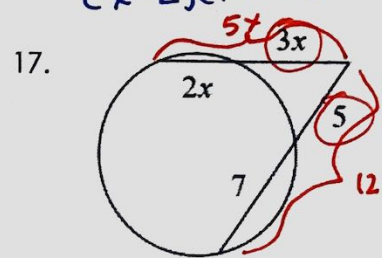
$$x(x+10) = 3(8)$$

$$x^2 + 10x = 24$$

$$x^2 + 10x - 24 = 0$$

$$(x-2)(x+12) = 0$$

$$\boxed{x = 2}$$

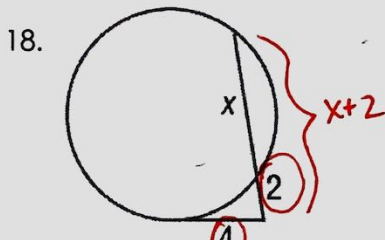


$$3x \cdot 5x = 5 \cdot 12$$

$$15x^2 = 60$$

$$x^2 = 4$$

$$\boxed{x = 2}$$

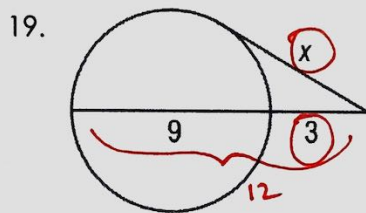


$$4^2 = 2(x+2)$$

$$16 = 2x + 4$$

$$12 = 2x$$

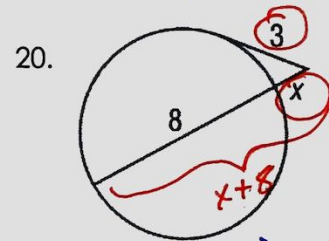
$$\boxed{x = 6}$$



$$x^2 = 3 \cdot 12$$

$$x^2 = 36$$

$$\boxed{x = 6}$$



$$3^2 = x(x+8)$$

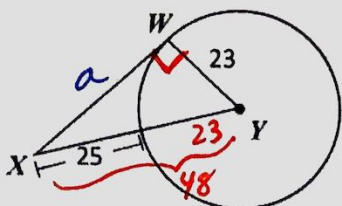
$$9 = x^2 + 8x$$

$$0 = x^2 + 8x - 9$$

$$0 = (x-1)(x+9)$$

$$\boxed{x = 1}$$

21. If \overline{WX} is tangent to circle Y, find WX.



$$a^2 + 23^2 = 48^2$$

$$a^2 + 529 = 2304$$

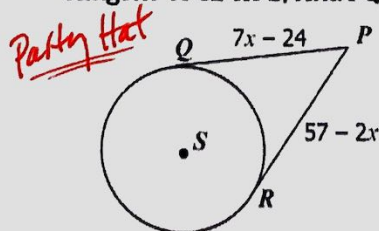
$$a^2 = 1775$$

$$a = \sqrt{1775}$$

$$a = \sqrt{25 \cdot 71}$$

$$\boxed{a = 5\sqrt{71}}$$

22. If \overline{PQ} and \overline{PR} are tangent to circle S, find PQ.



Patty Hat

$$7x - 24 = 57 - 2x$$

$$+2x \quad +2x$$

$$9x - 24 = 57$$

$$+24 \quad +24$$

$$9x = 81$$

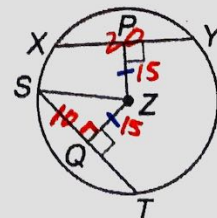
$$\boxed{x = 9}$$

→ Plug in to PQ

$$7(9) - 24$$

$$\boxed{PQ = 39}$$

23. $QZ = 15$, $PZ = 15$, $XY = 20$
 $SQ = 10$; $SZ = 5\sqrt{13}$



$$10^2 + 15^2 = C^2$$

$$100 + 225 = C^2$$

$$325 = C^2$$

$$C = 5\sqrt{13}$$