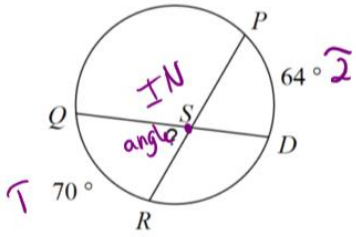
# Angles: Vertex INSIDE the Circle

Video Link:

Ex. 1 Chord Chord



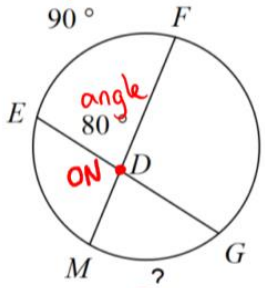

$2(\angle) = \overset{\frown}{1} + \overset{\frown}{2}$

$2(?) = 70 + 64$

$2? = 134$

$? = 67°$

Ex. 2 Chord Chord



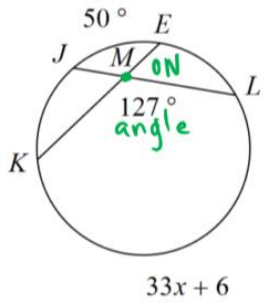

$2(\angle) = \overset{\frown}{1} + \overset{\frown}{2}$

$2(80) = 90 + ?$

$160 = 90 + ?$

$70° = ?$

Ex. 3 Chord Chord




$2(\angle) = \overset{\frown}{1} + \overset{\frown}{2}$

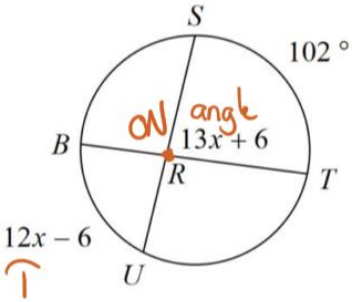
$2(127) = 56 + 33x + 6$

$254 = 33x + 56$

$198 = 33x$

$6 = x$

Ex. 4 Chord Chord




$2(\angle) = \overset{\frown}{1} + \overset{\frown}{2}$

$2(13x + 6) = 12x + 6 + 102$

$26x + 12 = 12x + 96$

$14x = 84$

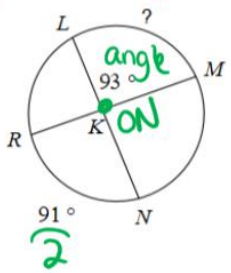
$x = 6$

Geometry Name_____

# Angles: Vertex INSIDE Circle

**Find the measure of the arc or angle indicated. Assume that lines which appear tangent are tangent.**

1)



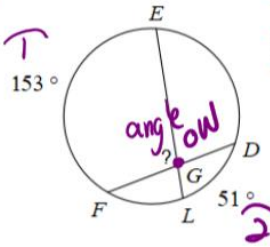

$2(\angle) = \overset{\frown}{T} + \overset{\frown}{2}$

$2(93) = 91 + ?$

$186 = 91 + ?$

$95 = ?$

2)



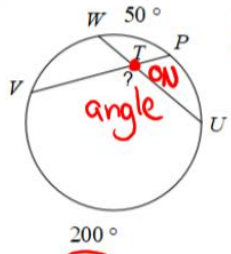

$2(\angle) = \overset{\frown}{T} + \overset{\frown}{2}$

$2(?) = 153 + 51$

$2? = 204$

$? = 102$

3)

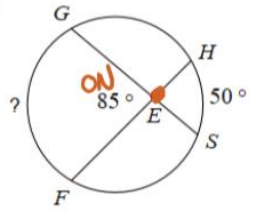



$2(?) = 50 + 200$

$2(?) = 250$

$? = 125$

4)




$2(\angle) = \overset{\frown}{T} + \overset{\frown}{2}$

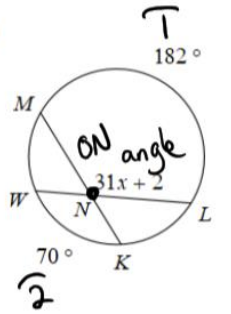
$2(85) = 50 + ?$

$170 = 50 + ?$

$120° = ?$

**Solve for $x$. Assume that lines which appear tangent are tangent.**

5)



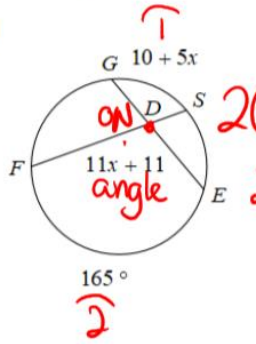

$2(31x+2) = 70 + 182$

$62x + 4 = 252$

$62x = 248$

$\boxed{x = 4}$

6)




$2(\angle) = \overset{\frown}{T} + \overset{\frown}{2}$

$2(11x+11) = 10 + 5x + 165$

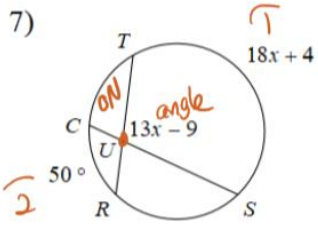
$22x + 22 = 5x + 175$

$17x + 22 = 175$

$17x = 153$

$\boxed{x = 9}$

7)




$2(\angle) = \overset{\frown}{T} + \overset{\frown}{2}$

$2(13x-9) = 18x + 4 + 50$

$26x - 18 = 18x + 54$

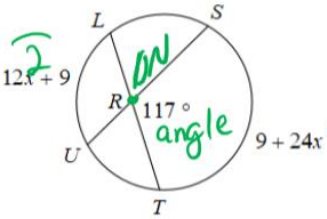
$-18x \quad -18x$

$8x - 18 = 54$

$8x = 72$

$\boxed{x = 9}$

8)




$2(\angle) = \overset{\frown}{T} + \overset{\frown}{2}$

$2(117) = 12x + 9 + 9 + 24x$

$234 = 36x + 18$

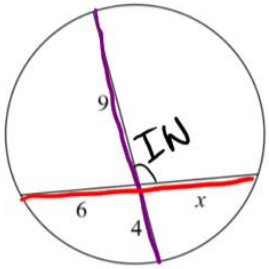
$216 = 36x$

$\boxed{6 = x}$

# Segments: Vertex INSIDE the Circle

Video Link:

Ex. 1 Chord Chord



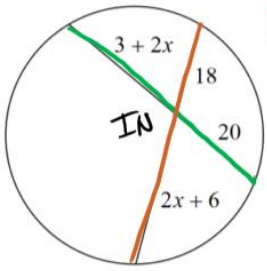

$P(P) = P(P)$

$9(4) = 6(x)$

$36 = 6x$

$\boxed{6 = x}$

Ex. 2 Chord Chord




$P(P) = P(P)$

$20(3+2x) = 18(2x+6)$

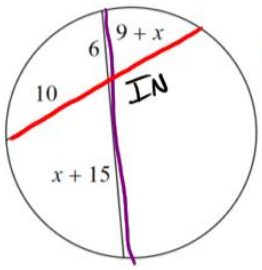
$60+40x = 36x+108$

$60+4x = 108$

$4x = 48$

$\boxed{x = 12}$

Ex. 3 Chord Chord




$P(P) = P(P)$

$6(x+15) = 10(9+x)$

$6x+90 = 90+10x$

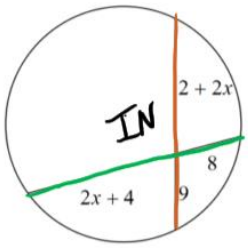
$-6x \quad -6x$

$90 = 90+4x$

$0 = 4x$

$0 = x$

Ex. 4 Chord Chord




$P(P) = P(P)$

$9(2+2x) = 8(2x+4)$

$18+18x = 16x+32$

$-16x \quad -16x$

$18+2x = 32$

$2x = 14$

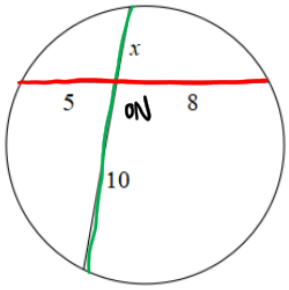
$\boxed{x = 7}$

Geometry Name _____

# Segments: Vertex INSIDE Circle

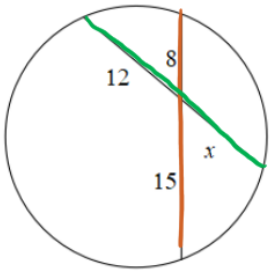
**Solve for $x$. Assume that lines which appear tangent are tangent.**

1)



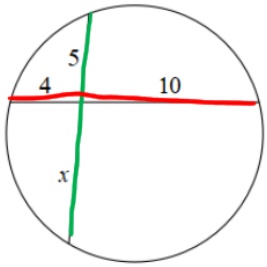

$P(P) = P(P)$
$10(x) = 8(5)$
$10x = 40$
$x = 4$

2)



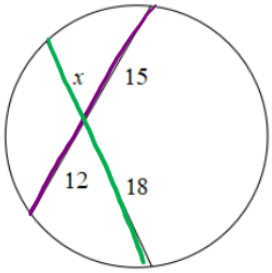

$8(15) = 12(x)$
$120 = 12x$
$10 = x$

3)



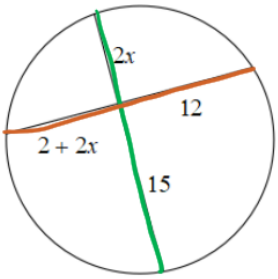

$5(x) = 10(4)$
$5x = 40$
$\boxed{x = 8}$

4)



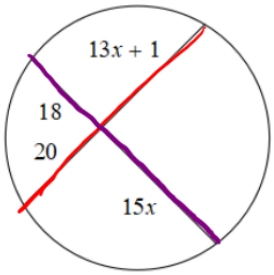

$18(x) = 12(15)$
$18x = 180$
$\boxed{x = 10}$

5)



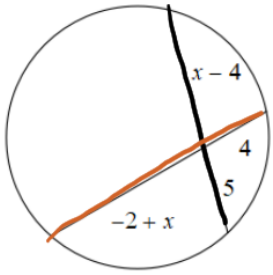

$12(2+2x) = 15(2x)$
$24 + 24x = 30x$
$24 = 6x$
$\boxed{4 = x}$

6)



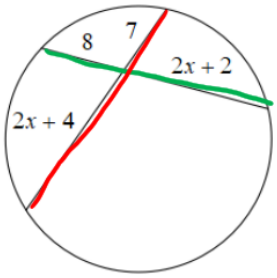

$20(13x+1) = 18(15x)$
$260x + 20 = 270x$
$20 = 10x$
$\boxed{2 = x}$

7)




$5(x-4) = 4(-2+x)$
$5x - 20 = -8 + 4x$
$x - 20 = -8$
$x = 12$

8)

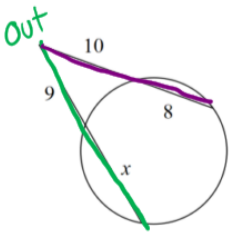



$8(2x+2) = 7(2x+4)$
$16x + 16 = 14x + 28$
$2x + 16 = 28$
$2x = 12$
$\boxed{x = 6}$

# Segments: Vertex OUTSIDE the Circle

Video Link:

Ex. 1 Secant Secant




$O(w) = O(w)$

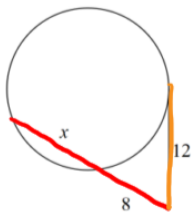
$9(9+x) = 10(10+8)$

$81 + 9x = 180$

$9x = 99$

$\boxed{x = 11}$

Ex. 2 Secant Tangent




$O(w) = O(w)$

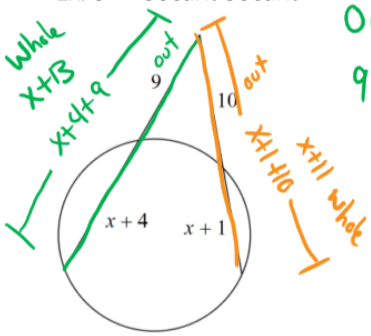
$8(8+x) = 12(12)$

$64 + 8x = 144$

$8x = 80$

$\boxed{x = 10}$

Ex. 3 Secant Secant




$O(w) = O(w)$

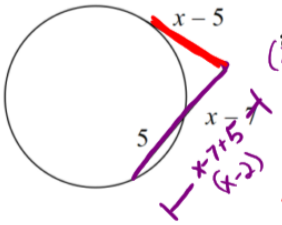
$9(x+13) = 10(x+11)$

$9x + 117 = 10x + 110$

$117 = x + 110$

$\boxed{7 = x}$

Ex. 4 Tangent Tangent




$O(w) = O(w)$

$(x-7)(x-2) = (x-5)(x-5)$

$x^2 - 2x - 7x + 14 = x^2 - 5x - 5x + 25$

$x^2 - 9x + 14 = x^2 - 10x + 25$

$-x^2 \quad -x^2$

$-9x + 14 = -10x + 25$

$+10x \quad +10x$

$x + 14 = 25$

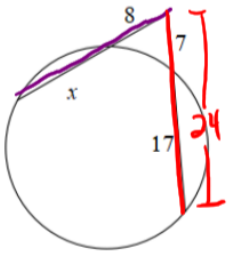
$\boxed{x = 11}$

Geometry Name _____

# Segments: Vertex OUTSIDE Circle

**Solve for *x*. Assume that lines which appear tangent are tangent.**

1)




O(W) = O(W)

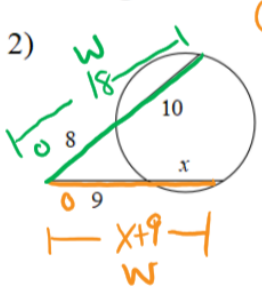
8(x+8) = 7(24)

8x+64 = 168

8x = 104

**x = 13**

2)




O(W) = O(W)

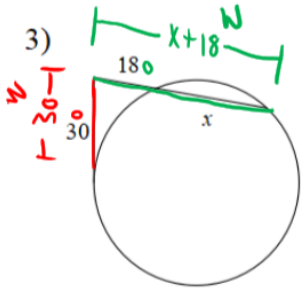
9(x+9) = 8(18)

9x+81 = 144

9x = 63

**x = 7**

3)




O(W) = O(W)

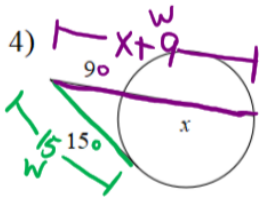
30(30) = 18(x+18)

900 = 18x+144

756 = 18x

**42 = x**

4)




O(W) = O(W)

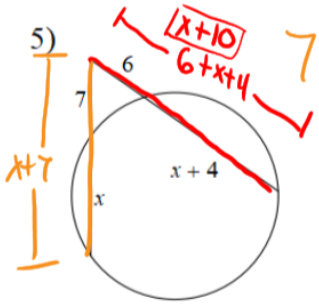
9(x+9) = 15(15)

9x+81 = 225

9x = 144

**x = 16**

5)



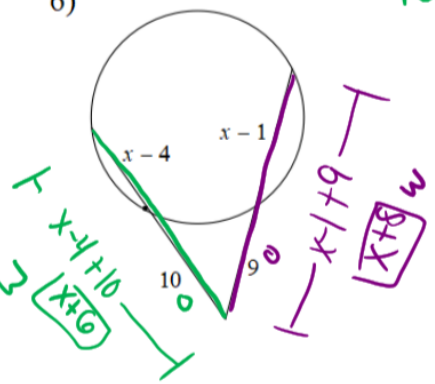

7(x+7) = 6(x+10)

7x+49 = 6x+60

x+49 = 60

**x = 11**

6)



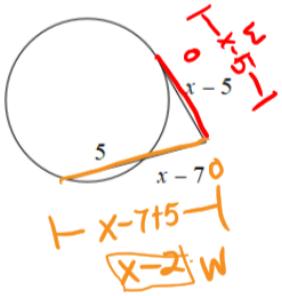

10(x+6) = 9(x+8)

10x+60 = 9x+72

x+60 = 72

**x = 12**

7)




(x-7)(x-2) = (x-5)(x-5)

$x^2$ − 9x + 14 = $x^2$ − 10x + 25

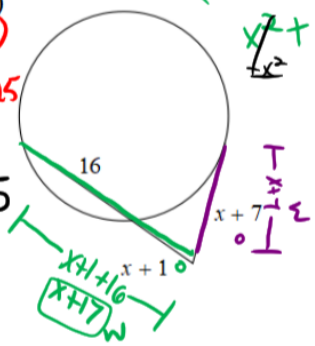
−9x + 14 = −10x + 25

+10x +10x

x + 14 = 25

**x = 11**

8)




(x+1)(x+17) = (x+7)(x+7)

$x^2$ + 18x + 17 = $x^2$ + 14x + 49

18x+17 = 14x+49

−14x −14x

4x+17 = 49

4x = 32

**x = 8**