ANSWER KEY

Tell whether the line or segment is best described as a *chord, secant, tangent, diameter,* or *radius* of OC.

$\overline{HC}$ radius

B. $\overline{DG}$ tangent
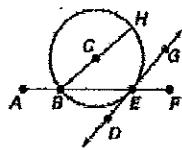
$\overline{BE}$ chord

D. $\overrightarrow{AF}$ secant

$\overline{BH}$ diameter

$\overrightarrow{AB}$ and $\overrightarrow{AD}$ are tangent to OC. Find the value(s) of x.

$x^2 - 1 = 24$

$x^2 = 25$

$x = \pm 5$
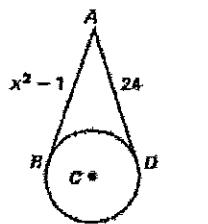
If $XY = 18$, $YZ = 14$, $XZ = 20$, find the radius of each circle.

$x + y = 18$ $x = 18 - y$ $y + z = 14$ $x = 12$

$x + z = 20 \longrightarrow$ $18 - y + z = 20,$ $y = 6$ $y = 6$

$y + z = 14$ $-y + z = 2,$ $x + 6 = 18$ $z = 8$

$\quad\quad\quad\quad\quad\quad \underline{y + z = 14}$ $x = 12$
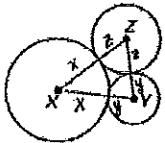
$\quad\quad\quad\quad\quad\quad 2z = 16 \quad z = 8$

Assume that lines that appear to be tangent are tangent. Find the value of each variable.

8.
$(2x-8)°$
$(5x+2)°$

$3x - 8 + 5x + 2 = 180$
$8x - 6 = 180$
$8x = 186$
$\boxed{x = 23.25}$

19. diameter $\overline{AB}$
$(\frac{1}{3}x+5)°$
$\frac{1}{2}x°$

$\frac{1}{2}x + \frac{1}{3}x + 5 = 90$
$\frac{5}{6}x = 85$
$\boxed{x = 102}$

20.
$142°$ $x°$
38
$69°$

$180 - 142 = 38$

$38 = \frac{1}{2}(x + 69)$
$76 = x + 69$
$\boxed{7 = x}$

11.
$17°$
$42°$
$x°$

$17 = \frac{1}{2}(x - 42)$
$34 = x - 42$
$\boxed{76 = x}$

22.
$138°$
$x°$

$138 \cdot 2 = 276$
$360 - 276$
$\boxed{x = 84}$

23.
$(\frac{1}{4}x+6)°$
$(\frac{1}{2}x+4)°$

$\frac{1}{4}x + 6 = \frac{1}{2}x + 4$
$2 = \frac{1}{4}x$
$\boxed{8 = x}$
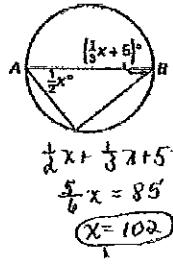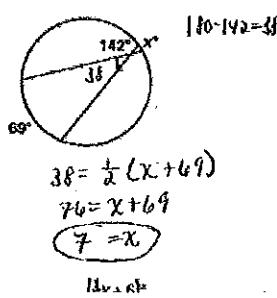
Find the measure of the arc or angle in OO, given $m\overarc{CD} = 108°$ and $m\overarc{BE} = 100°$.

9. $m\angle ABC$ $\boxed{50°}$ (across from diameter)

10. $m\angle CED$ $\boxed{54}$ ($\frac{1}{2} \cdot 108$)

11. $m\angle BDE$ $\boxed{50°}$ ($\frac{1}{2} \cdot 100$)

12. $m\angle BCE$ $\boxed{50°}$ ($\frac{1}{2} \cdot 100$)

13. $m\angle ABD$ $\boxed{36°}$ ($\frac{1}{2} \cdot 72$)

14. $m\angle CBD$ $\boxed{54°}$ ($\frac{1}{2} \cdot 108$)

15. $m\overarc{AD}$ $\boxed{72°}$

16. $m\overarc{ABC}$ $\boxed{180°}$
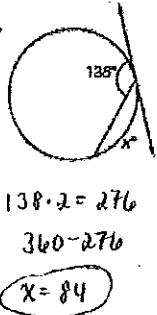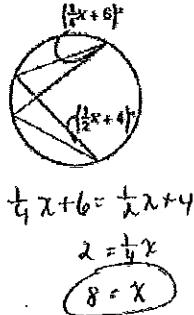
12. Give the coordinates of the center, the radius, and the equation of the circle.

center = $(3, 3)$ $(x-3)^2 + (y-3)^2 = 9$

radius = 3
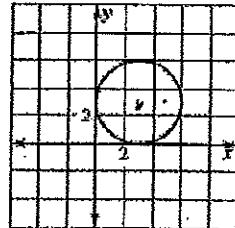
Find all possible values of x. Then determine the solution(s) of the problem.

43.
46.
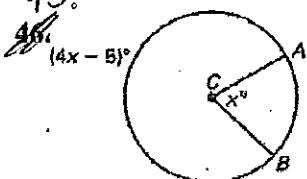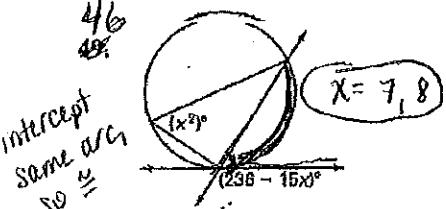
$(4x-5)°$

$5x-5=360$

$5x=365$

$\boxed{x=73}$

44. $(x^2)°$
47.

$(5x+36)°$

$10x°$

$x^2+15x+36=360$

$x^2+15x-324=0$

$(x+27)(x-12)=0$

$x=-27, \boxed{12}$

45. $(2x+18)°$
48.

$14x°$

$(180-14x)$

$(4x+6)°$
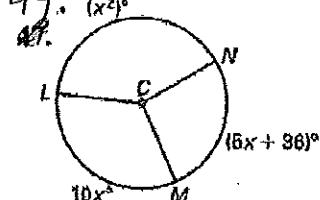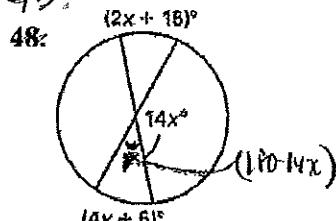
$180-14x=\frac{1}{2}(6x+20)$

$180-14x=3x+10$

$170=17x$

$\boxed{10=x}$
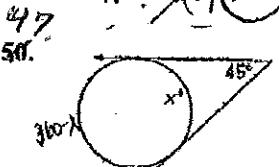
46.
49.

intercept same arc so ≅

$(x^2)°$

$(236-15x)°$

$\boxed{x=7,8}$

$x^2=180-(236-15x)$

$x^2=180-236+15x$

$x^2=-56+15x$

$x^2-15x+56=0$

$(x-7)(x-8)=0$

47.
50.

$45°$

$x°$

$360-x$

$45=\frac{1}{2}(360-2x)$

$45=180-x$

$\boxed{x=135}$

48.
51.

$x+5$

$x-1$

6

$2x$

$2x+6$

y

8

$(y)^2=(x-1)(x+5)$

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

$4y^2=4x^2+12x$

$y^2=x^2+3x$

$x^2+8x=(x-1)(x+5)$

$x^2+8x=x^2+4x-5$

$3x=4x-6$

$\boxed{6=x}$

$3x\cdot2x=3\cdot18$

$6x^2=54$

$x^2=9$

$\boxed{x=3}$

±3 but no negative!

49.
54.

$3x$ $4x$

$x+2$

$x+10$

$\boxed{x≈5.583}$

$x≈\frac{1+\sqrt{21}}{}$

$4x\cdot x=8(x+10)$

$4x^2=8x+80$

$x^2=2x+20$

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

$\frac{2\pm\sqrt{(-2)^2-4(1)(-20)}}{2}$

$\frac{2\pm\sqrt{84}}{2}$

$\frac{2\pm2\sqrt{21}}{2}$

not negative

$\boxed{1+\sqrt{21}}$

50.

$3x$ 18 $2x$ 8

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5) $r=6$, center $=(0,3)$

6) $(x-2)^2+(y+4)^2=r^2$

$(6-2)^2+(-4+4)^2=r^2$

$16+=r^2$

$\boxed{(x-2)^2+(y+4)^2=16}$

7) $(x+1)^2+(y-3)^2=r^2$

$(7+1)^2+(-3-3)^2=r^2$

$8^2+(-6)^2=r^2$

$64+36=r^2$

$100=r^2$

$\boxed{(x+1)^2+(y-3)^2=100}$

9) $x^2+(y-4)^2=r^2$

$7^2+(4-4)^2=r^2$

$49=r^2$

$\boxed{x^2+(y-4)^2=49}$
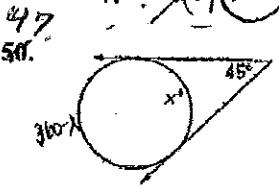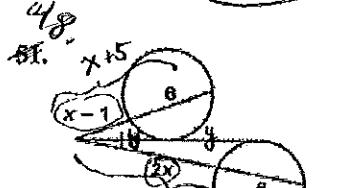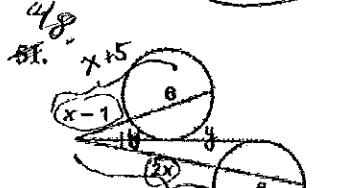
10) $\boxed{(x+2)^2+(y+4)^2=25}$

$(3+2)^2+(-4+4)^2=5^2$

11) $r=4$ center $(-3,0)$

12) $r=6$ center $(-2,1)$
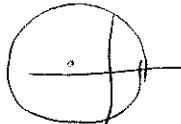
7) $x^2-2x+1+y^2+6y+9=-3+10$

$\boxed{(x-1)^2+(y+3)^2=7}$

8) $x^2+6x+9+y^2-2y+1=15+10$

$\boxed{(x+3)^2+(y-1)^2=25}$

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a)

b) 8π

c) $25a-48≈\boxed{30.54}$

d) $4x^2-\pi x^2=\boxed{.86x^2}$

e) $2\left(\frac{1}{4}(44\pi)-\frac{49}{2}\right)=\boxed{27.97}$

f) $\frac{2}{3}=\frac{x}{}$

$2\pi(52)$

$\boxed{209.44 yds}$