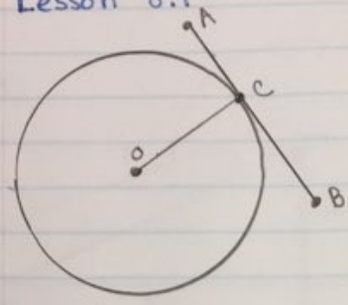
Lesson 8.1

1)

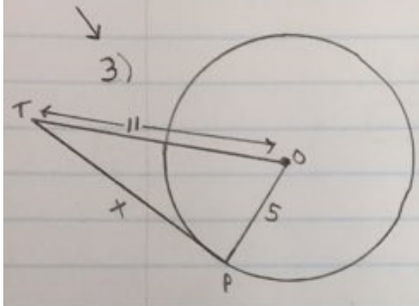


$AB \Rightarrow$ tangent

$\angle OCA = \angle OCB = 90°$

Point C is the point of tangency

3)



$\angle OPT = 90°$ (Tang P)

$x \Rightarrow$ leg

$a^2 = c^2 - b^2$

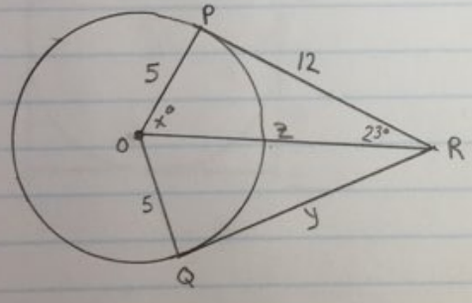
$a^2 = 11^2 - 5^2$

$a^2 = 121 - 25$

$a^2 = 96$

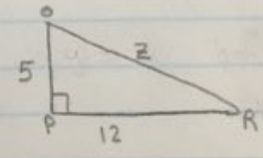
$a = 9.8$

2)



$\angle OPR = \angle OQR = 90°$ (Tang P)

$x° = \angle RPO = 67°$ (SATT)



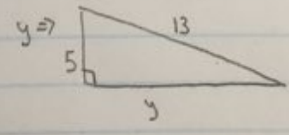
$z \Rightarrow$ $c^2 = a^2 + b^2$

$c^2 = 12^2 + 5^2$

$c^2 = 144 + 25$

$c^2 = 169$

$c = 13$



$y \Rightarrow$ leg

$a^2 = c^2 - b^2$

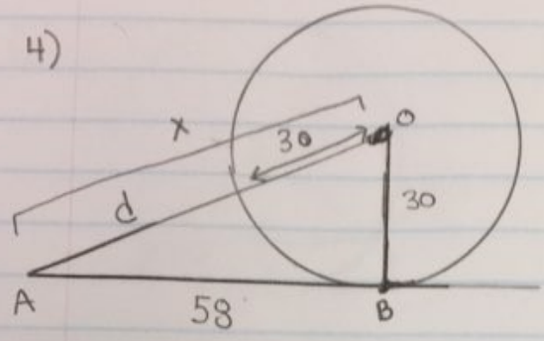
$a^2 = 13^2 - 5^2$

$a^2 = 169 - 25$

$a^2 = 144$

$a = 12$

4)



$\angle OBA = 90°$ (Tang P)

x = hyp

$c^2 = a^2 + b^2$

$c^2 = 58^2 + 30^2$

$c^2 = 3364 + 900$

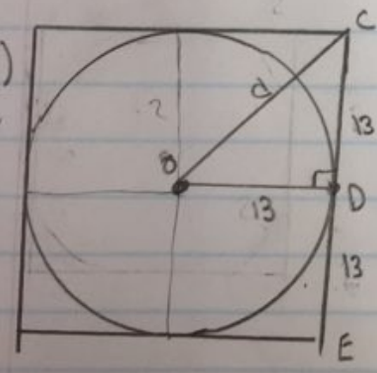
$c^2 = 4264$

$c = 65.3$

$d = 65.3 - 30$

$\boxed{d = 35.3}$

5)



$\angle ODC = \angle ODE = 90°$ (Tang P)

d => hyp

$c^2 = a^2 + b^2$

$c^2 = 13^2 + 13^2$

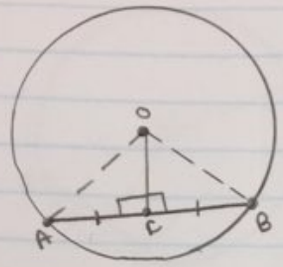
$c^2 = 169 + 169$

$c^2 = 338$

$\boxed{c = 18.4}$

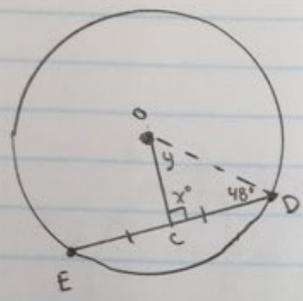
Lesson 8.2

1)



AC = CB (radii)
∠OCB = ∠OCA = 90° (ChP)
OB = OA (radii)

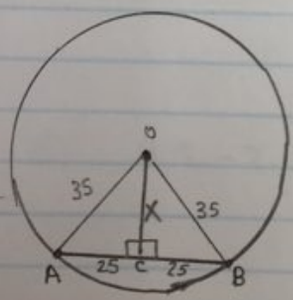
2)



x° = ∠OCD = ∠OCE = 90° (ChP)
EC = CD (ChP)
OD = OE (radii)

y° = ∠DOC = 42° (SATT)

4)

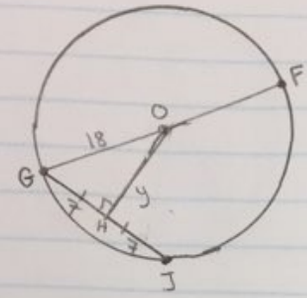


∠OCB = ∠OCA = 90° (ChP)
OA = OB = 35 (radii)
AC = CB = 25 (ChP)

X = ? leg

$a^2 = c^2 - b^2$
$a^2 = 35^2 - 25^2$
$a^2 = 1225 - 625$
$a^2 = 600$
$\boxed{a = 24.5}$

3)



$\angle OHG = \angle OHJ = 90°$ (ch P)

$GH = HJ = 7$ (ch P)

$OF = OG = 18$ (radii)

y => leg

$a^2 = c^2 - b^2$

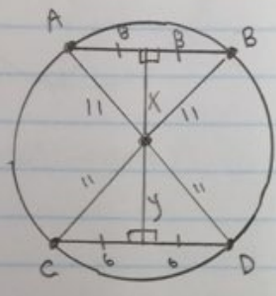
$a^2 = 18^2 - 7^2$

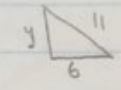
$a^2 = 324 - 49$

$a^2 = 275$

$a = 16.6$

5)





X => leg

$a^2 = c^2 - b^2$

$a^2 = 11^2 - 8^2$

$a^2 = 121 - 64$

$a^2 = 57$

$a = 7.5$

y => leg

$a^2 = c^2 - b^2$

$a^2 = 11^2 - 6^2$

$a^2 = 121 - 36$

$a^2 = 85$

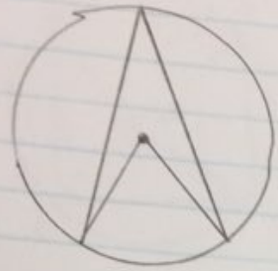
$a = 9.2$

a) AB chord is closer to centre

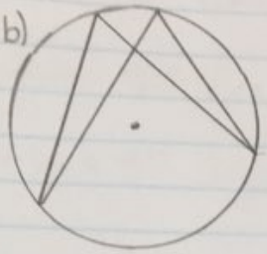
b) $9.2 - 7.5 = 1.7$ closer

Lesson 8.3

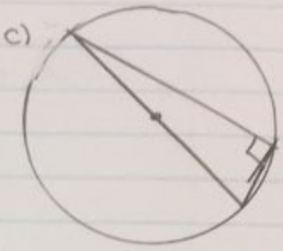
1) a)



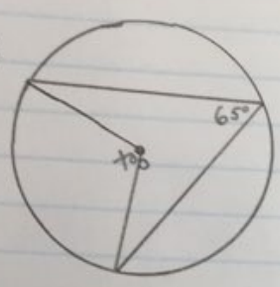
b)



c)

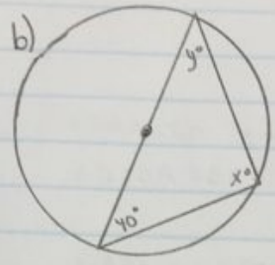


2) a)



$x° = 130°$ (ins/cent >)

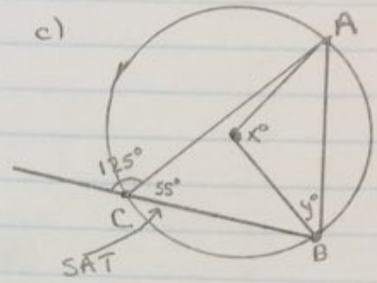
b)



$x° = 90°$ (ins >, dia)

$y° = 50°$ (SATT)

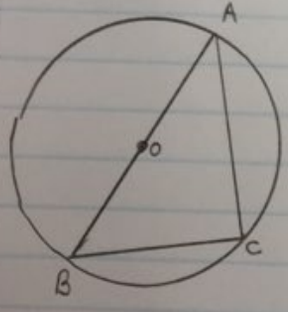
c)



$x° = 110°$ (ins/cent, $\overset{\frown}{AB}$)

$y° = 35°$ (Itt)

3)

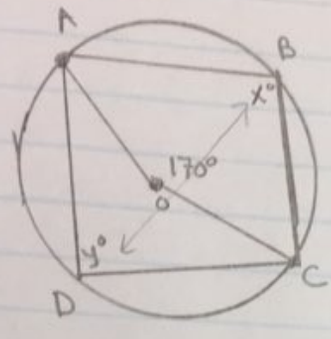


$\angle AOB = 180°$ (central)

$\angle ACB = 90°$ (ins/cent >, AB)

inscribed angles are half the central angle

4)

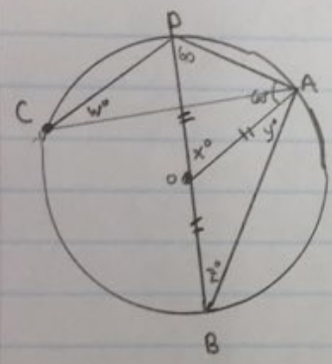


$\angle AOC = 170°$ (central)

$\angle ADC = 85°$ (ins/cent>, $\overset{\frown}{AC}$)

$\angle ABC = 95°$ (Cy Quad)

5)



$\angle DAO = 60°$ (given)

$OD = OA = OB$ (radii)

$\angle ADO = \angle DAO = 60°$ (ITT)

$x° = \angle DOA = 60°$ (SATT)

$2° = \angle DBA = 60°$ (Ins/cent>, $\overset{\frown}{DA}$)

$y° = \angle OAB = 60°$ (Itt)

$w° = \angle DCA = 60°$ (Ins/cent>, $\overset{\frown}{DA}$)