Geometry Honors

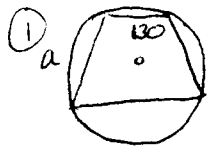
~~Ch 6~~ Circle Pre-Test

Ms. Chan

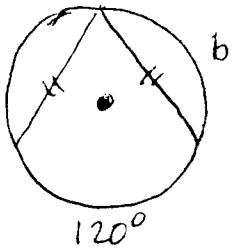
A. True / False:
1 through 5 based on definitions

Fill in the blank:
6 through 10 based on conjectures.

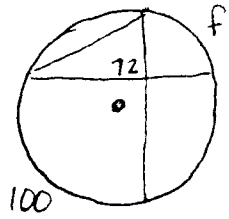
B. Show all work:

(1) 

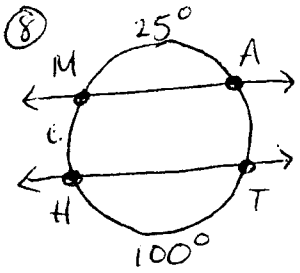
$a = ?$

(2) 

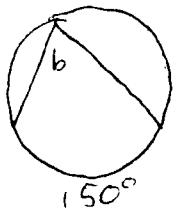
$b = ?$

(3) 

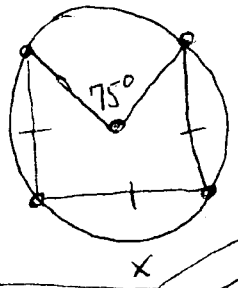
$f = ?$

(8) 

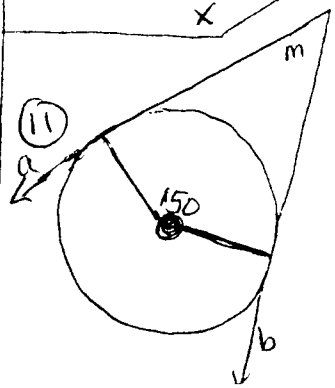
$\overleftrightarrow{MA} \parallel \overleftrightarrow{TH}$
$C = ?$

(9) 

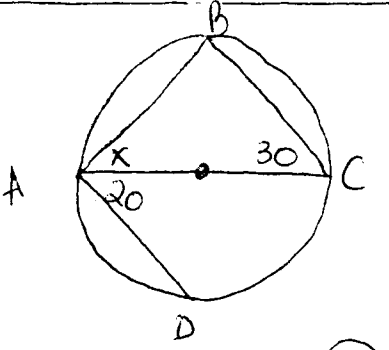
JOKER ALERT!
$b = ?$

(10) 

$x = ?$

(11) 

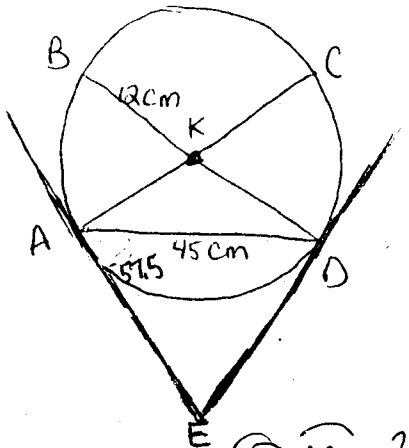
a and b are tangents,
$m = ?$



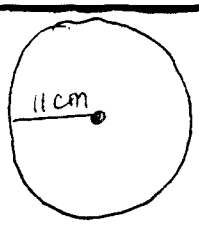
(19) $x = ?$ (21) $\overset{\frown}{AD} = ?$

(20) $\overset{\frown}{BCD} = ?$

For problems 22–29, $\overline{EA}$ & $\overline{ED}$ are tangent segments.
$m\angle AKD = 115°$

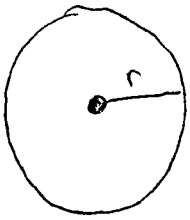


(22) $m\angle ADE = ?$ (26) $\overset{\frown}{ABD} = ?$

④ 

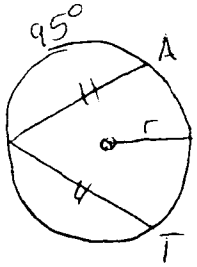
use $\pi = \frac{22}{7}$

$C = ?$

⑤ 

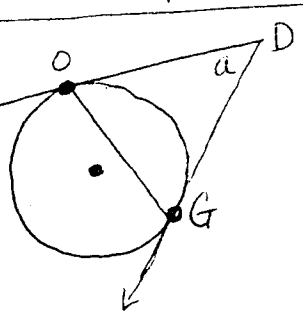
$C = 56\pi$

$r = ?$

⑥ 

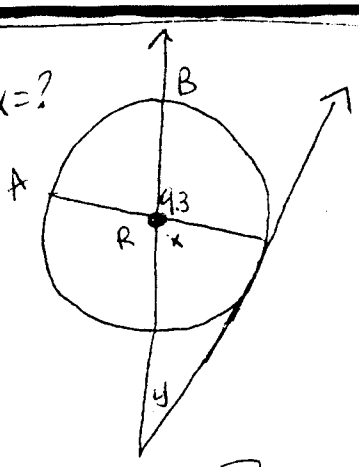
$r = 15$ cm

arc length of $\overset{\frown}{AB} = ?$

⑦ 

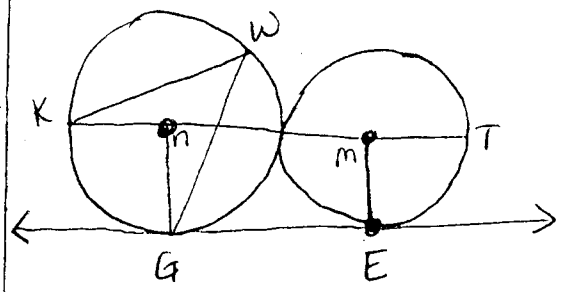
$\overleftrightarrow{DO}$ and $\overleftrightarrow{DG}$ are tangents.

$m\angle DOG = 53°$; $a = ?$

⑫ $x = ?$ 

⑬ $y = ?$ ⑭ $\overset{\frown}{AB} = ?$

For problems 15-18, use $\overset{\frown}{ET} = 74°$.



⑮ $m = ?$ ⑰ $\overset{\frown}{KG} = ?$

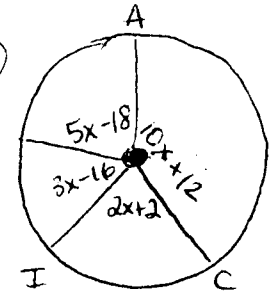
⑯ $n = ?$ ⑱ $m\angle KWG = ?$

㉓ $m\angle E = ?$ ㉗ arc length $\overset{\frown}{CD} =$

㉔ $m\angle KAD = ?$ ㉘ arc length $\overset{\frown}{ABD}$

㉕ $\overset{\frown}{AB} = ?$ ㉙ perimeter $\triangle AKD = ?$

#30 - #35: JOKER PROBLEMS

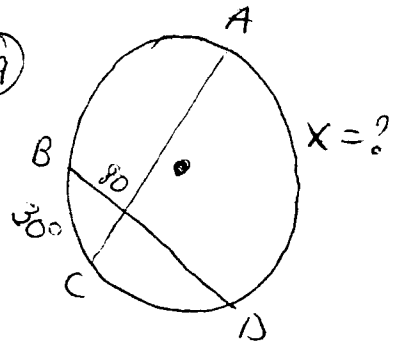
㊱ 

$m\overset{\frown}{BAC} = ?$

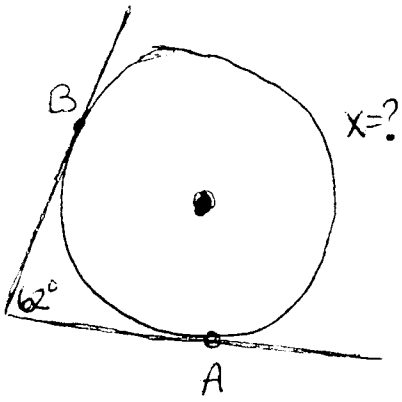
㊲ How many degrees does a minute hand move in 38 minutes?

㊳ What is the minor arc measure formed by the hour hand and minute hand at 4:41?

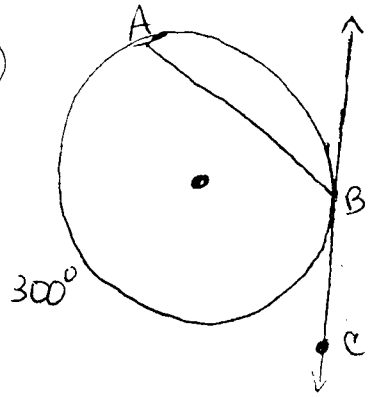
39



40

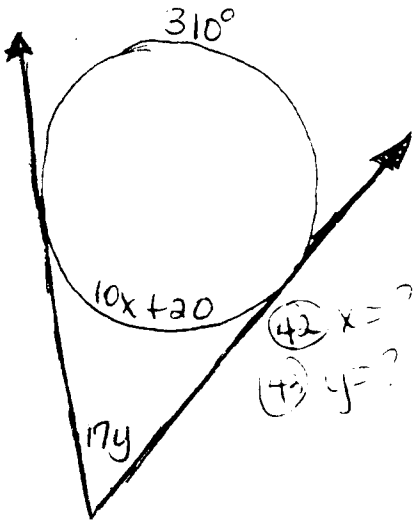


41



$m\angle ABC = 5x + 10$

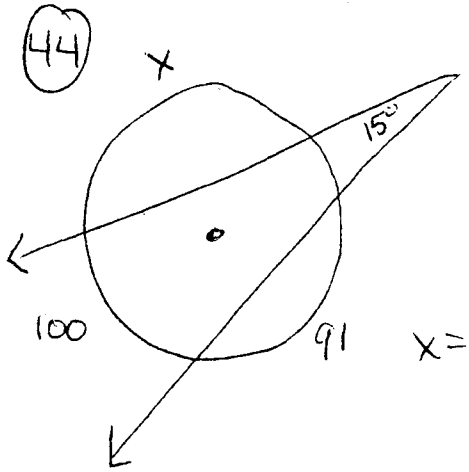
$x = ?$



42 $x = ?$

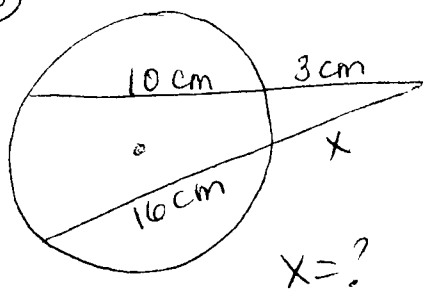
43 $y = ?$

44



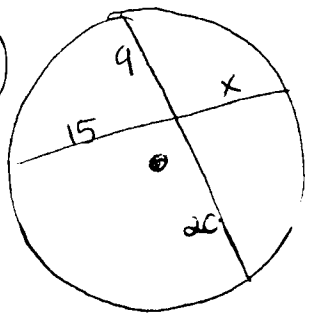
$x = ?$

45



$x = ?$

46



$x = ?$

Geometry Honors

Ch. 7 Circle Pre Test Solutions

Ms. Chan

$130 = \frac{1}{2}(a + 200)$

$260 = a + 200$

$60 = a$

$a = 60$

≅ chords intercept ≅ arcs,

$b = \frac{360 - 120}{2} = \frac{240}{2} = 120$

120°

108° is linear pr to 72°.

$108 = \frac{1}{2}(100 + f)$

$216 = 100 + f$

$116 = f$

116°

use inscribed $\angle$s

complete the $\triangle$

$C = 2\pi r$

$C = 2\pi(11)$

$C = 22\left(\frac{22}{7}\right)$ → $\frac{484}{7}$

$\begin{array}{r} 22 \\ \times 22 \\ \hline 44 \\ 44 \\ \hline 484 \end{array}$

$\frac{484}{7}$

$C = 56\pi$

$2\pi r = 56\pi$

$r = 28$

28

(11) radius drawn to the pt. of tangency is $\perp$ to the tangent. ∴ $m = 360 - (150 + 90 + 90)$

$m = 30$

30°

(12) $x = 93^\circ$'s linear pair

87°

(13) y = half the difference of the 2 intercepted arcs.

$y = \frac{93 - 87}{2} = \frac{6}{2} = 3^\circ$ - or -

complete the triangle:

3°

(14) $m\overset{\frown}{AB} = 87^\circ$

If $\overset{\frown}{ET} = 74^\circ$, so does the central $\angle$.

∴ $m = 106^\circ$.

(15) 106°

(16) $n = \underset{(\text{circle})}{360^\circ} - (106 + 90 + 90)$

(22) since $\overline{EA}$ and $\overline{ED}$ are tangent segments, they are ≅. ∴ if $\angle DAE = 57.5^\circ$, so does $\angle ADE$.

57.5°

(23) $\angle E = {}^\circ$ (complete the $\triangle$)

65°

(24) $\overline{KA} \perp \overline{AE}$ b/c radius drawn to the pt. of tangency is 90°. ∴ $\angle KAD + 70^\circ = 90^\circ$

$\angle KAD = 32.5^\circ$

(25) $\triangle KAD$ is isosceles since all radii are ≅. If $\angle KAD = 32.5^\circ$, so does $\angle KDA$. ∴ $\angle AKD = {}^\circ$ ∴ $\angle AKB = 65^\circ$ as well as $\overset{\frown}{AB}$.

65°

(26) If $\overset{\frown}{AB} = 40^\circ$, so does $\overset{\frown}{CD}$ b/c vert. $\angle$s are ≅.

$\overset{\frown}{ABD} = \overset{\frown}{ABC} + \overset{\frown}{CD}$

$= 180 + 65$

245°

$2\pi r = 56\pi$

$r = 28$ 28

arc length $= \frac{9}{360} \cdot 2\pi r$

$= \frac{15}{360} \cdot 2\pi(15)$

$= \frac{19}{72} \cdot 30\pi$

$= \frac{19}{12} \cdot 5\pi$

$\frac{95}{12}\pi$

tangent segments $\cong$
$\therefore \overline{BD} \cong \overline{DG}$ which makes $\triangle DOG$ isosceles.
$a = 180 - (53 \cdot 2)$
$a = 180 - 106$

74°

parallel lines intercept $\cong$ arcs, $\therefore \overset{\frown}{MH} \cong \overset{\frown}{AT}$

$= \frac{360 - 125}{2} = \frac{235}{2} =$

$\frac{5}{5}$ 117.5°

75

arc = to central angle
$\therefore x = \frac{360 - 75}{3} = \frac{285}{3}$

95°

106°

(16) $n = \frac{360°}{(\text{quad})} - (106 + 90 + 90)$

$n = 360 - 286$

74°

(17) $\overset{\frown}{KG} = 74°$ s linear pr.

106°

(18) $m\angle KWG = \frac{1}{2}(106)$

53°

(19) $\angle B = 90°$ b/c it's inscribed in a semicircle. $\therefore x = 60$

60°

(20) $\overset{\frown}{BCD} = 2(60 + 20) = 2(80)$

160°

(21) $\overset{\frown}{AB} = 2(30) = 60$
$\overset{\frown}{BC} = 2(60) = 120$
$\overset{\frown}{CD} = 2(20) = 40$
$\therefore \overset{\frown}{AD} = 360 - (60 + 120 + 40)$
$\overset{\frown}{AD} = 360 - 220$

140°

(36) $20x - 20 = 360° \rightarrow$ complete circle!
$20x = 380$
$x = 19$

$m\overset{\frown}{BAC} = 5x - 18 + 10x + 12$
$= 15x - 6$
$= 15(19) - 6$

15 × 19 = 135, 15 = 285, −6

279°

$ABD = ABC + CD$
$= 180 + 65$

245°

(27) arc length $\overset{\frown}{CD} = \frac{65}{360} \cdot 2\pi(12)$

$= \frac{13}{72} \cdot 24\pi$

$= \frac{8}{3}\pi$

$\frac{13}{3}\pi$

(28) arc length $\overset{\frown}{ABD} = \frac{245}{360} \cdot 2\pi(12)$

$= \frac{49}{72} \cdot 24\pi$

$= \frac{49}{3}\pi$

$\frac{49}{3}\pi$

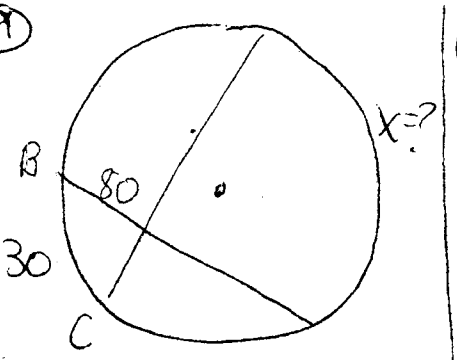
(29) Perimeter $\triangle AKD =$
$45 + 12 + 12$
$45 + 24$

69

(37) There are 60 mins in 360°. $\therefore$ the minute hand moves 6° every min. $\therefore$ it moves $38(6°)$ in 38 mins.

228°

(39)



$80 = \frac{30 + x}{2}$

$160 = 30 + x$

$x = 130$

130°

(40) $62 = \frac{x - (360 - x)}{2}$

$124 = x - 360 + x$

$484 = 2x$

$242 = x$

242°

(41) $m\angle ABC = 5x + 10$

$m\angle ABC = \frac{300 - 60}{2}$

$5x + 10 = \frac{240}{2}$

$5x + 10 = 120$

$5x = 110$

$x = 22$

outside $\angle$ measurement is

(44) measure of outside $\angle = \frac{1}{2}$(big arc − small arc)

$15^\circ = \frac{1}{2}(100 - \text{small arc})$

$30^\circ = 100 - \text{small arc}$

$-70 = -\text{small arc}$

$70^\circ = \text{small arc}$

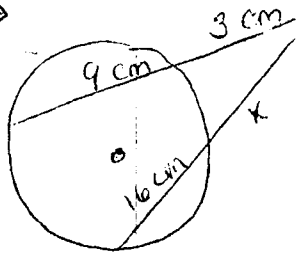
$\therefore x = 360 - (100 + 91 + 70)$

$x = 360 - 261$

$x = 99^\circ$

99°

(45) I wrote the problem incorrectly, use the new picture →



(whole secant$_1$)(external$_1$) = (whole secant$_2$)(external$_2$)

$(12)(3) = (x + 16)(x)$

$36 = x^2 + 16x$

$0 = x^2 + 16x - 36$

$x^2 + 16x - 36 = 0$

Factor by product & sum:

−36	16
18, −2	

$(x + 18)(x - 2) = 0$

$x = -18, 2$

However since "x" represents the length of the external part of the secant, x can't equal a negative #.

$\therefore x = 2$

2

(11) $m\angle ABC = 5x+10$

$m\angle ABC = \frac{300-60}{2}$

$5x+10 = \frac{240}{2}$

$5x+10 = 120$

$5x = 110$

$x = 22$

outside ∡ measurement is equal to $\frac{1}{2}$(big arc − sm. arc)

22

---

outside ∡ measurement is equal to $\frac{1}{2}$(big arc − sm. arc)

$7y = \frac{310-(10x+20)}{2}$

we'll come back to this equation later.

$10x+20 = 50$

$10x = 30$

$x = 3$

(12) 3

---

(13) $17y = \frac{310-50}{2}$

$17y = \frac{260}{2}$

$17y = 130$

$y = \frac{130}{17}$

$\frac{130}{17}$

---

(46) If 2 chords intersect, then the product of the 2 parts of one chord is equal to the product of the 2 parts of the other chord.

$15x = 9(20)$

$15x = 180$

$x = \frac{180}{15} = \frac{60}{5} = 12$

12

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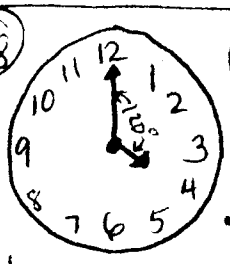
(38) 

@ 4:00, the angle measurement is 120°.

minute hand moves 6° per min therefore, after 41 mins, it has moved 246°.

∴ The new angle measurement is 126°. (246−120=12

angle measurement of 4:41 = ?

However, we must take into account that the hour hand has moved as well. The hour hand moves $\frac{1}{2}$° per min.

∴ After 41 mins, it has moved 20.5° thus making the 126° angle smaller.

$126° - 20.5° = 105.5°$

So, at 4:41, the angle measurement is 105.5°

105.5°