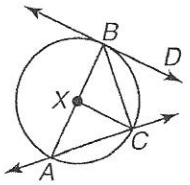
Name: Key Class: _____ Date: _____ ID: R

Unit 11: Circles Test Review

1. **Use the figure.**



Name the circle. ⊙X

Name a radius of the circle. $\overline{XA}$, $\overline{XC}$, $\overline{XB}$

Name the diameter of the circle. $\overline{AB}$

Name a chord. $\overline{AB}$, $\overline{BC}$, $\overline{AC}$

Name a tangent. $\overleftrightarrow{BD}$

Name a secant. $\overleftrightarrow{AC}$,

2. Find the exact circumference and area given that:
   A. radius= 4cm
   B. diameter= 12in

$C = 8\pi$ cm

$A = 16\pi$ cm^2

$C = 12\pi$ in

$A = 36\pi$ in^2

3. The wheels on Elliot's truck each have a circumference of 22π inches. Determine the radius of each wheel.Determine the area of the wheel.

$d = 22$ in

$r = 11$ in

$A = 11^2\pi$

$A = 121\pi$ in^2

4. The diameter of a circular swimming pool is 15 feet. Find the exact circumference and area.

$C = 15\pi$ ft

$A = \pi\, 7.5^2$

$A = 56.25\pi$ ft^2

5. Given that the circumference is 20π km, find the exact area.

$d = 20$ km

$r = 10$ km

$A = \pi\, 10^2$

$A = 100\pi$ km^2

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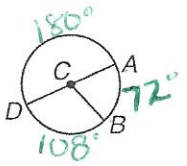
6. In $\odot C$, $m\overset{\frown}{AB} = 72$. Assume all lines which appear to be diameters are actual diameters.



Find:

m<ACD= 180°

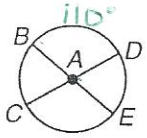
m<BCD= 108°

$m\overset{\frown}{BD}$= 108°

$m\overset{\frown}{ABD}$= 180°

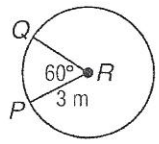
C

7. In $\odot A$, $m\angle BAD = 110$. Find $m\overset{\frown}{DE}$. linear Pairs



a. 35
b. 55
c. 70
d. 110

8. Find the exact **LENGTH** of $\overset{\frown}{PQ}$ in $\odot R$ (in terms of *pi*). $\ell = \frac{a}{360} C$ recall $C = d\pi$



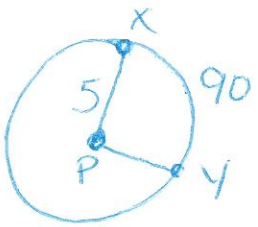
$\ell = \frac{60}{360} 6\pi$

$\ell = 1\pi$ m

9. Find the exact **LENGTH** of $\overset{\frown}{PQ}$ in $\odot R$ (in terms of *pi*) if the m<PRQ is 120° and the diameter is 24.

$\ell = \frac{120}{360} 24\pi$ $\ell = 8\pi$ units

10. Points X and Y lie on $\odot P$ so that $PX = 5$ meters and $m\angle XPY = 90$. Find the exact **length** of $\overset{\frown}{XY}$.



$\ell = \frac{90}{360} 10\pi$

$\ell = 2.5\pi$ m

$d = 10$

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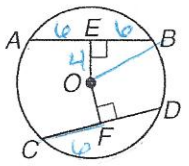
11. In $\odot O$, $AB = 12$ centimeters, $OE = 4$ centimeters, $OF = 4$ centimeters, and $m\overset{\frown}{CD} = 123°$. Find CF. Find the radius. Find $m\overset{\frown}{AB}$



Radius:

$c = \sqrt{52}$

$4^2 + 6^2 = c^2$

$\sqrt{4}$ (2) $\sqrt{13}$

CF= 6 ⊥ bisect the chord radii

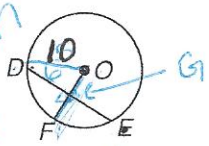
radius= $2\sqrt{13}$

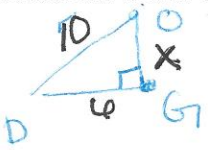
$m\overset{\frown}{AB}$= 123° ≅ chords ⇒ ≅ arcs

12. If $DE = 12$ inches, OF = 10 inches, and $\overline{OF}$ is perpendicular to $\overline{DE}$. ← change to 10

Doesn't work b/c chord is longer than diameter.

A. Find the distance from the center to the chord and the distance from the chord to Point F.





$6^2 + x^2 = 10^2$

$36 + x^2 = 100$

$x^2 = 64$

$x = 8$

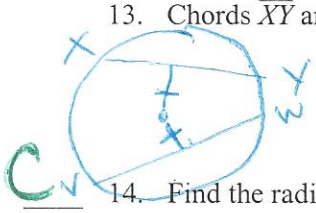
OG = 8 in

GF = 2 in

B. If $m\overset{\frown}{DF}$=63°, what is $m\overset{\frown}{FE}$?

$m\overset{\frown}{FE} = 63°$

13. Chords $\overline{XY}$ and $\overline{WV}$ are equidistant from the center of $\odot O$. If $XY = 2x + 30$ and $WV = 5x - 12$, find x.



chords equidistant to the center are ≅

$XY = WV$

$2x + 30 = 5x - 12$

$42 = 3x$

$x = 14$ units

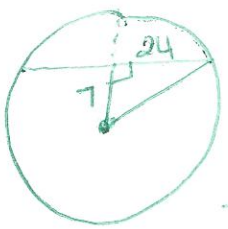
14. Find the radius of a circle if a 48-meter chord is 7 meters from the center. Draw it!

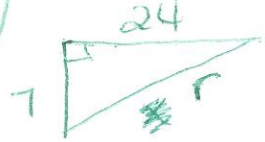
* chord ⊥ to the radii is bisected by the radii.

a. 14 m
b. 24 m
c. 25 m
d. 41 m

Center of circle

*Shortest distance from any point to a given line is ⊥ to the line.





$7^2 + 24^2 = r^2$

$625 = r^2$

$25 = r$

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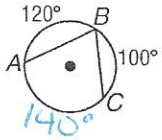
B 15. Find $m\angle ABC$. 10.4 inscribed ∠ is $\frac{1}{2}$ the measure of the arc.

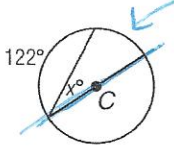


$\angle ABC = \frac{1}{2}\,140°$

a. 50
b. 70
c. 90
d. 140

D 16. Find x. 180 − 122 = 58°

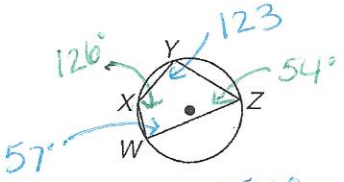
10.4 inscribed ∠s.



$x = \frac{1}{2}\,58$

a. 122
b. 61
c. 58
d. 29

17. If $m\angle X = 126$ and m<W= 57, find:



* Inscribed Quadrilateral in a circle has op. ∠s which are suppl.

m< Z= 54°

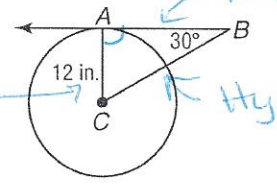
m<Y= 123°

$m\overset{\frown}{WXY}$ = 108° = 2·54

$m\overset{\frown}{WZY}$ = 252° = 2·∠X = 2·126

inscribed → arc must double the angle.

18. If $\overline{AB}$ is tangent to ⊙C at A, find BC and AB.



long leg = Short·√3
12√3

Short leg

Hyp = 2·Short
2·12
= 24

BC= 24 in

AB= 12√3 in

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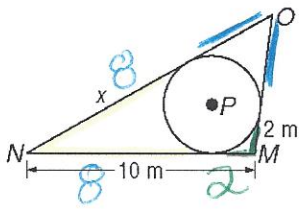
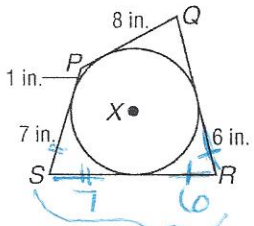
D 19. If $\overline{MN}$, $\overline{NO}$, and $\overline{MO}$ are tangent to $\odot P$, find x.

10.5 tangents which meet at ~~on~~ exterior point Some are ≅ from pt to pt of tangency



a. 2 m
b. 5 m
c. 6 m
d. 8 m

C 20. $\overline{PQ}$, $\overline{QR}$, $\overline{RS}$, and $\overline{SP}$ are tangent to $\odot X$. Find RS.



a. 9 in.
b. 12 in.
c. 13 in.
d. cannot tell

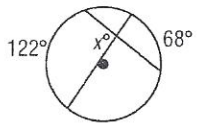
B 21. Find x.

angle

$x = \frac{1}{2}(68 + 122)$ ← they make a Plus sign inside so add 2 arcs.

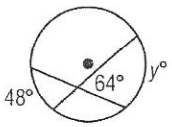
$x = \frac{1}{2}\,190$

$x = 95°$



a. 122
b. 95
c. 68
d. 61

C 22. Find y.



a. 16
b. 56
c. 80
d. 112

angle $= \frac{1}{2}(\text{arc} + \text{arc})$ ← to get rid of fraction

$2 \cdot 64 = 2 \cdot \frac{1}{2}(4 + 48)$

$128 = 4 + 48$

$80° = 4$

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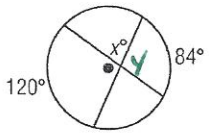
A 23. Find x. 10.6



a. 78
b. 90
c. 102
d. 156

Find y 1st b/c [x + y = 180 linear pairs]

$y = \frac{1}{2}(120 + 84)$

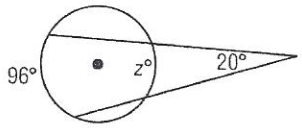
$y = \frac{1}{2}204$

$y = 102°$

$102 + x = 180$

$x = 78°$

C 24. Find z. 10.6



a. 38
b. 56
c. 58
d. 76

angle $= \frac{1}{2}$(Big − little)

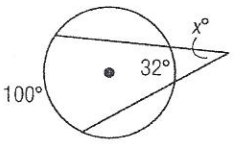
$20 = \frac{1}{2}(96 - z)$

$40 = 96 - z$

$-58 = -z$

$z = 58°$

D 25. Find x. 10.6



a. 132
b. 68
c. 66
d. 34

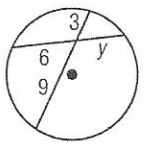
angle $= \frac{1}{2}$(Big − little)

$x = \frac{1}{2}(100 - 32)$

$x = \frac{1}{2}68$

$x = 34°$

D 26. Find y. 10.7



a. 18
b. 12
c. 6
d. 4.5

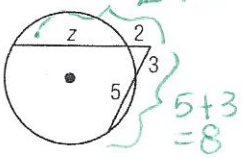
Product Parts of chord #1 = Products of chord #2

$3 \cdot 9 = 6 \cdot y$

$27 = 6y$

$4.5 = y$

B 27. Find z. 10.7



$z + 2$

$5 + 3 = 8$

a. 11.25
b. 10
c. 7.5
d. 4

ext (whole) = ext (whole)

$2(z + 2) = 3(8)$

$2z + 4 = 24$

$2z = 20$

$z = 10$

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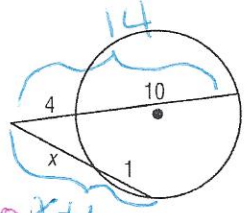
28. Find x. 10.7



$x+1$

$ext(whole) = ext(whole)$
$x(x+1) = 4(14)$
$x^2 + x = 56$
$x^2 + x - 56 = 0$
$(x+8)(x-7) = 0$
$x = -8$ or $x = 7$

must be $x = 7$ b/c distance can't be negative

10.8
$(x-h)^2 + (y-k)^2 = r^2$
(h, k) center
r = radius

B 10.8

29. Find the radius of the circle whose equation is $(x + 3)^2 + (y - 7)^2 = 289$.
   a. 7
   b. 17
   c. 34
   d. 289

$\sqrt{289} = 17$

A 10.8

30. Find the center of the circle whose equation is $(x + 11)^2 + (y - 7)^2 = 121$.
   a. $(-11, 7)$
   b. $(11, -7)$
   c. $(121, 49)$
   d. 11

$(-11, 7)$

A 10.8

31. Find the equation of a circle with center (0 , 0) and radius 4.
   a. $x^2 + y^2 = 4$.
   b. $x^2 + y^2 = 16$.
   c. $(x - 4)^2 + (y - 4)^2 = 16$
   d. $4x + 4y = 16$

$x^2 + y^2 = 16$

D 10.8

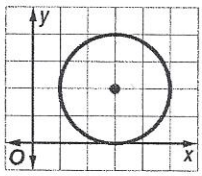
32. Find the equation of a circle whose center is at (2, 3) and radius is 6.
   a. $(x + 2)^2 + (y + 3)^2 = 6$.
   b. $(x - 2)^2 + (y - 3)^2 = 6$.
   c. $(x + 2)^2 + (y + 3)^2 = 36$
   d. $(x - 2)^2 + (y - 3)^2 = 36$

$(x-2)^2 + (y-3)^2 = 36$

D 10.8

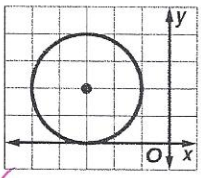
33. Identify the graph of $(x - 3)^2 + (y + 2)^2 = 4$.

a.

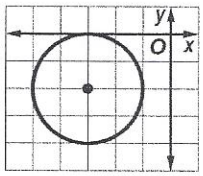


$(3, -2)$
$r = 2$ ✓

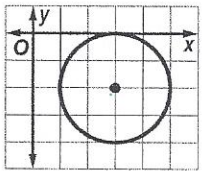
b.



c.

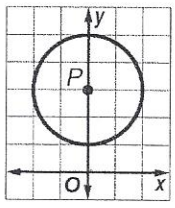


d.



A 10.8

34. Find the equation of $\odot P$.



$r = 2$
center $(0, 3)$
$(x)^2 + (y-3)^2 = 4$

a. $x^2 + (y - 3)^2 = 4$.
b. $x^2 + (y - 3)^2 = 2$.
c. $(x - 3)^2 + y^2 = 2$
d. $(x - 3)^2 + y^2 = 4$

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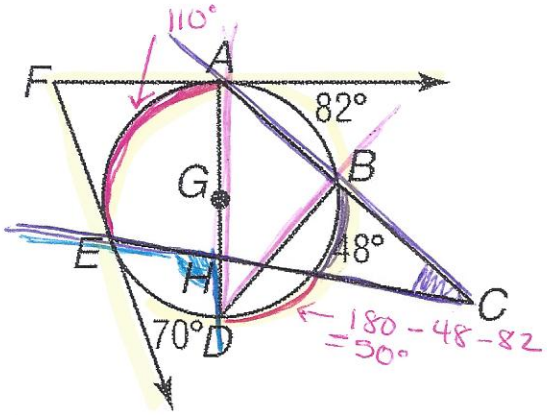
Use ⊙*G* with $\overrightarrow{FA}$ and $\overrightarrow{FE}$ tangent at *A* and *E*.



$\angle ACE = \frac{1}{2}(110° - 48°)$

$\angle ACE = 31°$

$\angle ADB = \frac{1}{2}\,82°$

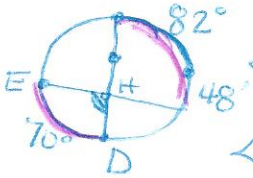
$\angle AFE = \frac{1}{2}(250 - 110)$

$\angle AFE = \frac{1}{2}\,140°$

$\angle AFE = 70°$

35. Find $m\angle ACE$=. 31° Find $m\angle ADB$.= 41°

Find $m\angle AFE$.= 70° Find $m\angle EHD$ = 100°



82 + 48

$\angle EHD = \frac{1}{2}(82 + 118)$

$\angle EHD = \frac{1}{2}(200)$

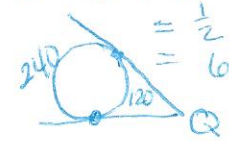
$\angle EHD = 100$

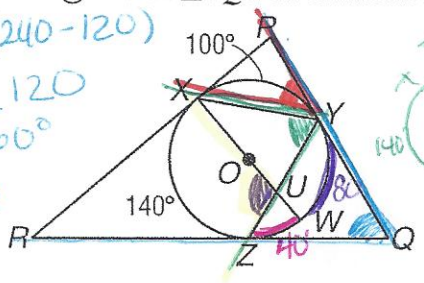
Use ⊙*O* with △*PQR* circumscribed.

$\angle PQR = \frac{1}{2}(240 - 120)$

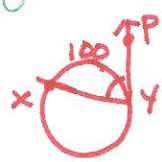
$= \frac{1}{2}\,120$

$= 60°$



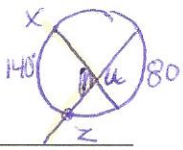


$\angle XYZ = \frac{1}{2}\,140$



$\angle PYX = \frac{1}{2}\,100°$

$\angle PYX = 50°$



$\angle XUZ = \frac{1}{2}(140 + 80)$

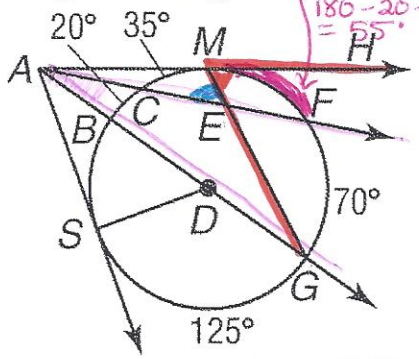
$\angle XUZ = \frac{1}{2}220$

$\angle XUZ = 110°$

36. Find $m\angle PQR$.= 60° Find $m\angle XYZ$= 70°

Find $m\angle PYX$= 50° Find $m\angle XUZ$= 110°

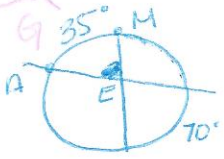
Use ⊙*D* with tangents $\overrightarrow{AS}$ and $\overrightarrow{AM}$.



180 − 20 − 35 − 70 = 55°

$\angle GAF = \frac{1}{2}(70 - 20)$

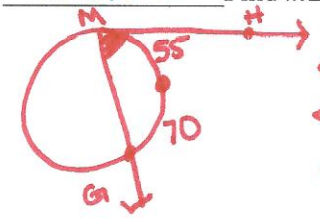
$\angle GAF = \frac{1}{2}\,50 = 25°$



$\angle AEM = \frac{1}{2}(35 + 70)$

$\angle AEM = \frac{1}{2}(105)$

37. Find $m\angle GAF$= 25° Find $m\angle AEM$= 52.5° Find $m\angle GMH$ = 62.5°



$\angle GMH = \frac{1}{2}\,MG$

$\angle GMH = \frac{1}{2}\,125$

$\angle GMH = 62.5°$