Name: Key **Geometry**

Date: _____ **Per:** _____ **Unit 10:** Circles

Classwork Inscribed Angles, Tangents, Angle & Arc Measures

Inscribed Angles 1-5

1. In circle P, if $m\overset{\frown}{QR} = 110^\circ$, $m\overset{\frown}{RS} = 94^\circ$, and $m\angle QRT = 27^\circ$, find each measure.

a) $m\angle QTR =$ 55°

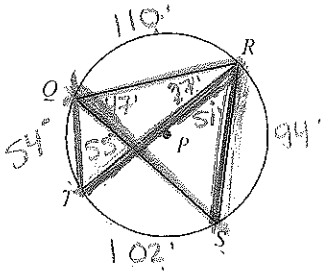
b) $m\angle RQS =$ 47°

c) $m\overset{\frown}{TS} =$ 102°

d) $m\angle TRS =$ 51°

e) $m\angle QSR =$ 55°

f) $m\overset{\frown}{QT} =$ 54°



For questions 2-5, find each value or measure.

2. $x =$ 14

* 2 angle = arc

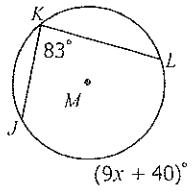
$2(83) = 9x + 40$

$166 = 9x + 40$

$-40 \quad -40$

$\frac{126}{9} = \frac{9x}{9}$

$x = 14$



3. $m\angle ABC =$ 51°

* 2 angle = arc

$2(5x+11) = 16x - 26$

$10x + 22 = 16x - 26$

$-10x \quad -10x$

$22 = 6x - 26$

$+26 \quad +26$

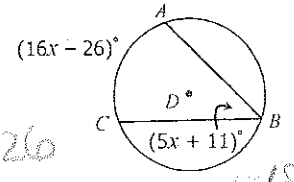
$\frac{48}{6} = \frac{6x}{6}$

$x = 8$

$5(8) + 11$

$40 + 11$

51°



4. $m\overset{\frown}{WX} =$ 106°

* 2 cradles using same arc so they are congruent.

$6x - 7 = 10x - 47$

$-6x \quad -6x$

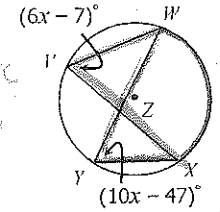
$-7 = 4x - 47$

$+47 \quad +47$

$\frac{40}{4} = \frac{4x}{4}$

$x = 10$

Tangents: 6 - 10



$10(10) - 47$

$100 - 47$

53°

2 angle = arc

$2(53) = 106°$

5. $m\angle DGF =$ 75°

* opposite angles supp

$4x + 7 + 8x - 31 = 180$

$12x - 24 = 180$

$+24 \quad +24$

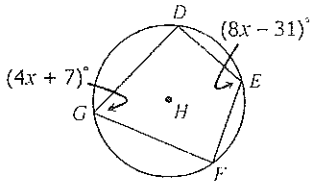
$\frac{12x}{12} = \frac{204}{12}$

$x = 17$

$4(17) + 7$

$68 + 7$

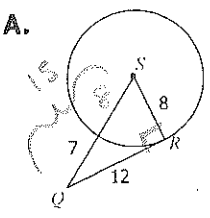
75°



6. In which of the following diagrams is $\overline{QR}$ tangent to circle S? Circle the best answer.

* use pythagorean theorem $a^2 + b^2 = c^2$

A.



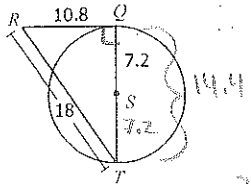
$8^2 + 12^2 = 15^2$

$64 + 144 = 225$

$208 \neq 225$

NO

B.



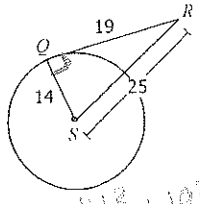
$(10.8)^2 + (14.4)^2 = 18^2$

$116.64 + 207.36 = 324$

$324 = 324$

YES

C.



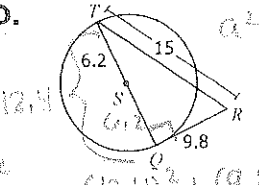
$14^2 + 19^2 = 25^2$

$196 + 361 = 625$

$557 \neq 625$

NO

D.



$(12.4)^2 + (9.8)^2 = 15^2$

$153.76 + 96.04 = 225$

$249.8 \neq 225$

NO

For questions 7-10, find each value or measure. Assume that segments that appear to be tangent are tangent.

7. $AC =$ 23.3

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

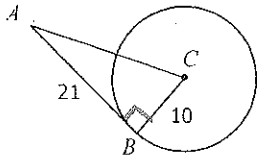
$10^2+21^2=c^2$

$100+441=c^2$

$541=c^2$

$\sqrt{541}=\sqrt{c^2}$

$23.3=c$



8. $ML =$ $\frac{1}{2}(12.8) = 6.4$

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

$(9.6)^2+b^2=16^2$

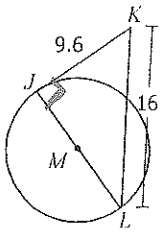
$92.16+b^2=256$

$-92.16 \quad -92.16$

$b^2=163.84$

$\sqrt{b^2}=\sqrt{163.84}$

$b=12.8$



9. $WY =$ 37

$43-2x=12x+1$

$+2x \quad +2x$

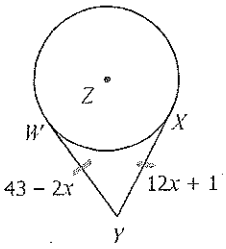
$43=14x+1$

$-1 \quad -1$

$42=14x$

$\frac{42}{14}=\frac{14x}{14}$

$3=x$

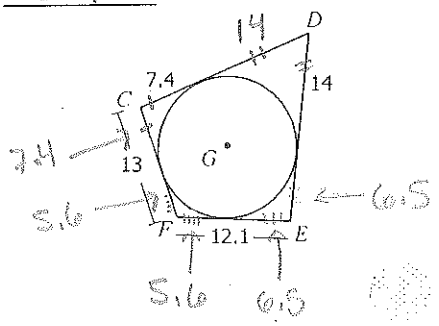


$43-2(3)$

$43-6$

37

10. Perimeter of $CDEF =$ 67



Arcs and Angle Measure: 11-20

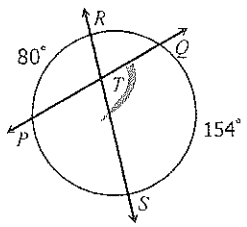
For questions 11-20, find each value or measure.

11. $m\angle QTS =$ 117°

property: 1

Vertical Arcs = x

$\frac{154+80}{2}=x$



12. $\overset{\frown}{mJH} =$ 34°

property: 1

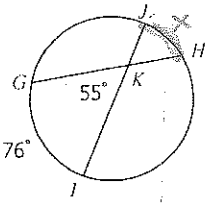
Vertical arcs = x

$\frac{76+x}{2}=55$

$76+x=110$

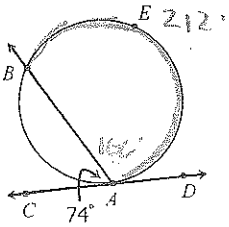
$-76 \quad -76$

$x=34°$



13. $\overset{\frown}{mBEA} =$ 212°

property: 2



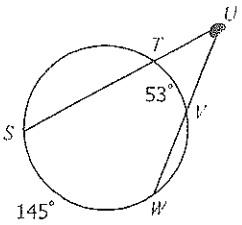
14. $m\angle TUV =$ 46°

property: 3

Big – Little = x

$\frac{145-53}{2}=x$

$46=x$



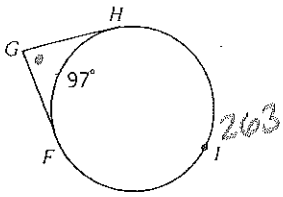
15. $m\angle FGH =$ 83°

property: 3

$\frac{B16 - Little}{2} = \angle$

$\frac{263 - 97}{2} = \angle$

$83 = \angle$



16. $m\widehat{PM} =$ 139°

property: 3

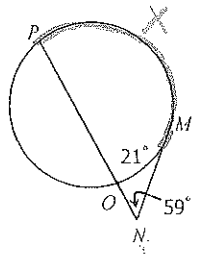
$\frac{B16 - Little}{2} = \angle$

$\frac{x - 21}{2} = 59$

$x - 21 = 118$

$+21 \quad +21$

$x = 139$



17. $x =$ 16

property: 1

$\frac{\text{Vertical arcs}}{2} = \angle$

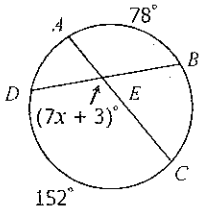
$\frac{152 + 78}{2} = 7x + 3$

$115 = 7x + 3$

$-3 \quad -3$

$\frac{112}{7} = \frac{7x}{7}$

$x = 16$



18. $x =$ 5

property: 2

2 angle = arc

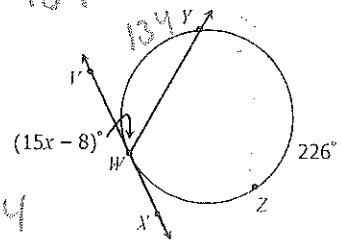
$2(15x - 8) = 134$

$30x - 16 = 134$

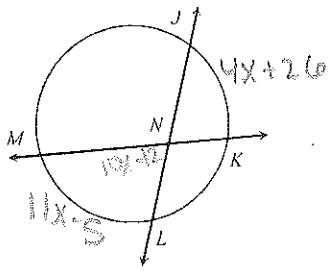
$+16 \quad +16$

$\frac{30x}{30} = \frac{150}{30}$

$x = 5$



19. If $m\widehat{ML} = (11x - 5)^\circ$, $m\widehat{JK} = (4x + 26)^\circ$ and $m\angle MNL = (10x - 12)^\circ$, find $m\angle MNL$.



$\frac{\text{Vertical Arcs}}{2} = \angle$

$\frac{11x - 5 + 4x + 26}{2} = 10x - 12$

$\frac{15x + 21}{2} = 10x - 12$

$2(10x - 12) = 15x + 21$

$20x - 24 = 15x + 21$

$-15x \quad -15x$

$5x - 24 = 21$

$+24 \quad +24$

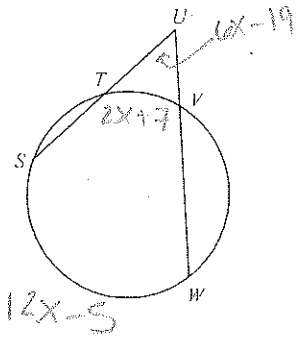
$\frac{5x}{5} = \frac{45}{5}$

$x = 9$

19. $m\angle MNL =$ $10(9) - 12$ $90 - 12$ (78)

property: 1

20. If $m\widehat{SW} = (12x - 5)^\circ$, $m\widehat{TV} = (2x + 7)^\circ$, and $m\angle TUV = (6x - 19)^\circ$, find $m\widehat{SW}$.



$\frac{B16 - Little}{2} = \angle$

$\frac{12x - 5 - (2x + 7)}{2} = 6x - 19$

$\frac{10x - 12}{2} = 6x - 19$

$10x - 12 = 2(6x - 19)$

$10x - 12 = 12x - 38$

$-10x \quad -10x$

$-12 = 2x - 38$

$+38 \quad +38$

$\frac{26}{2} = \frac{2x}{2}$

$x = 13$

20. $m\widehat{SW} =$ $12(13) - 5$ (151°)

property: 3