Name : __Kelj__

Date : _____ Period : ____

In the figure, $\overline{PR}$ and $\overline{QS}$ are diameters of $\odot U$. Find the measure of the indicated arc.

1. $m\widehat{PQ} = 42°$ (same as its central angle $\angle PUQ$)

2. $m\widehat{ST} = 74°$ (same as its central angle $\angle TUS$)

3. $m\widehat{TPS} = m\widehat{TP} + m\widehat{PQ} + m\widehat{QR} + m\widehat{RS} = 64+42+138+42 = \boxed{286°}$

4. $m\widehat{RT} = m\widehat{RS} + m\widehat{ST} = 42+74 = \boxed{116°}$

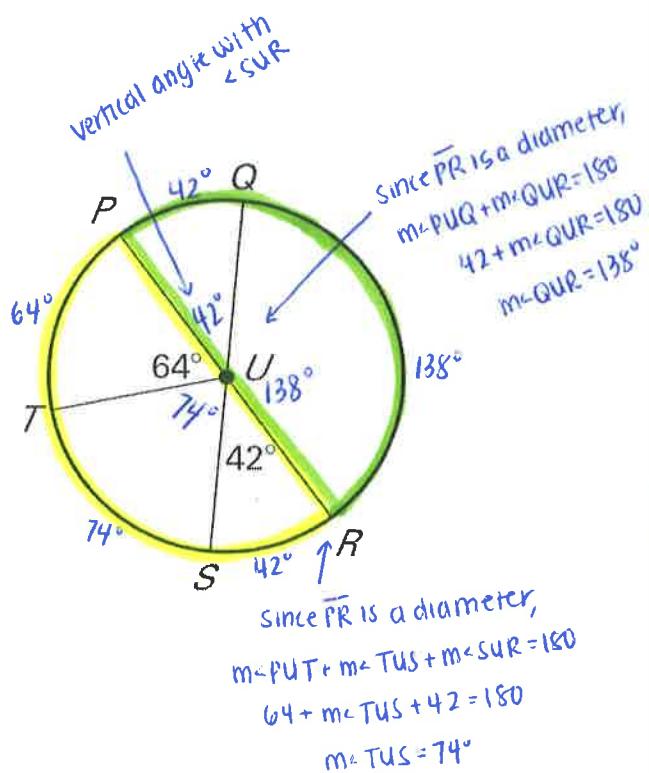5. $m\widehat{RQS} = m\widehat{RQ} + m\widehat{QP} + m\widehat{PT} + m\widehat{TS} = 138+42+64+74 = \boxed{318°}$

6. $m\widehat{QR} = 138°$ (same as its central angle $\angle QUR$)

7. $m\widehat{PQS} = m\widehat{PQ} + m\widehat{QR} + m\widehat{RS} = 42+138+42 = \boxed{222°}$

8. $m\widehat{TQR} = m\widehat{TP} + m\widehat{PQ} + m\widehat{QR} = 64+42+138 = \boxed{244°}$

9. $m\widehat{PS} = m\widehat{PT} + m\widehat{TS} = 64+74 = \boxed{138°}$

10. $m\widehat{PTR} = m\widehat{PT} + m\widehat{TS} + m\widehat{SR} = 64+74+42 = \boxed{180°}$

vertical angle with $\angle SUR$

$42°$ Q

P

Since $\overline{PR}$ is a diameter,
$m\angle PUQ + m\angle QUR = 180$
$42 + m\angle QUR = 180$
$m\angle QUR = 138°$

$64°$

42

$64°$ U $138°$

T $74°$ $138°$

$138°$

$42°$

$74°$

S $42°$ ↑R

Since $\overline{PR}$ is a diameter,
$m\angle PUT + m\angle TUS + m\angle SUR = 180$
$64 + m\angle TUS + 42 = 180$
$m\angle TUS = 74°$

→ First draw a circle with these diameters

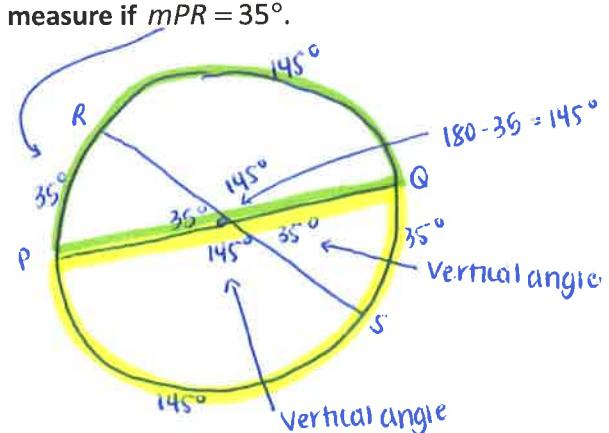**Two diameters of $\odot T$ are $\overline{PQ}$ and $\overline{RS}$. Find the given arc measure if $m\widehat{PR} = 35°$.**

11. $m\widehat{PS} = 145°$

12. $m\widehat{PRQ} = m\widehat{PR} + m\widehat{RQ} = 35+145 = \boxed{180°}$

13. $m\widehat{PSR} = m\widehat{PS} + m\widehat{SQ} + m\widehat{QR} = 145+35+145 = \boxed{325°}$

14. $m\widehat{PRS} = m\widehat{PR} + m\widehat{RQ} + m\widehat{QS} = 35+145+35 = \boxed{215°}$

$145°$

R

$180-35 = 145°$

$35°$ $145°$ Q

$35°$ $35°$ $35°$

P $145°$ $145°$ $35°$

Vertical angle

S

$145°$ Vertical angle

Vertical angle

15. Using the diagram below, please find $m\widehat{DAB}$.

Since $\overline{AD}$ is a diameter, $m\angle AEB + m\angle BEC + m\angle CED = 180$.

The congruence markings are showing that $m\widehat{AB} = m\widehat{CD}$

which also means that their central angles are congruent
$(m\angle AEB = m\angle CED)$

$90°$

B C

$45°$ $45°$

A × × D

$180 E$

180
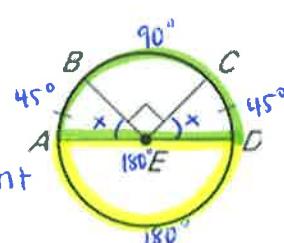
So then $x + 90 + x = 180$

$2x + 90 = 180$

$2x = 90$

$x = 45$

$m\angle AEB = 45°$ and $m\angle CED = 45°$

so $m\widehat{AB} = 45°$ and $m\widehat{CD} = 45°$

So $m\widehat{DAB} = m\widehat{DA} + m\widehat{AB} = 180+45 = \boxed{225°}$