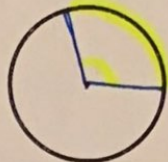
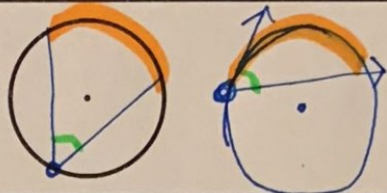

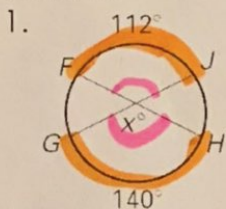


Name: _____ Date: _____

Angles - Vertex Inside & Outside

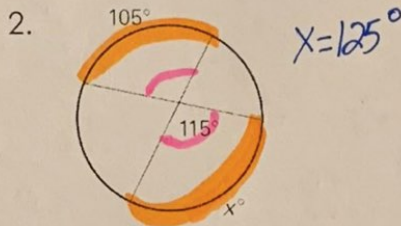
vertex is on the CENTER of the circle	$m\angle = m\text{Arc}$	
vertex is on the EDGE of the circle	$m\angle = \frac{\text{Arc}}{2}$ $\text{Arc} = 2 \cdot m\angle$	
vertex is INSIDE of the circle	$\angle = \frac{\text{arc} + \text{arc}}{2}$	

Solve for x:



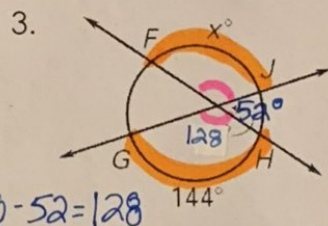
$$X = \frac{112 + 140}{2}$$

$$X = 126^\circ$$



$$2 \cdot 115 = \frac{105 + X}{2}$$

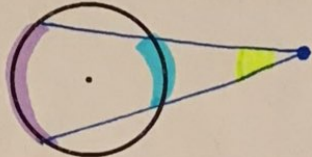
$$230 = 105 + X$$



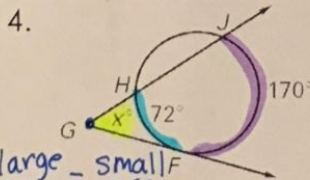
$$180 - 52 = 128$$

$$2 \cdot 128 = \frac{X + 144}{2} \cdot 2$$

$$256 = X + 144 \quad X = 112^\circ$$

vertex is OUTSIDE of the circle	$\angle = \frac{\text{large arc} - \text{small arc}}{2}$	
----------------------------------------	----------------------------------------------------------	---------------------------------------------------------------------------------------

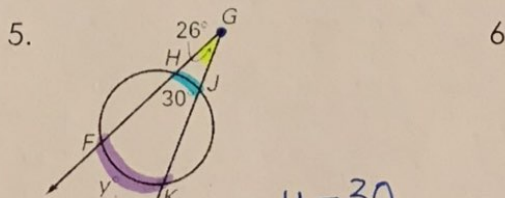
Solve for the variable:



$$\angle = \frac{\text{large arc} - \text{small arc}}{2}$$

$$X = \frac{170 - 72}{2}$$

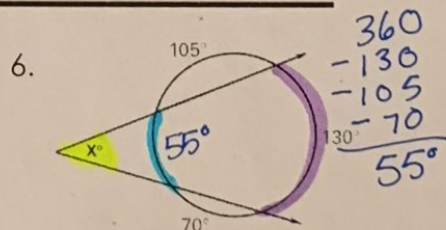
$$X = 49^\circ$$



$$2 \cdot 26 = \frac{y - 30}{2}$$

$$52 = y - 30$$

$$82 = y$$



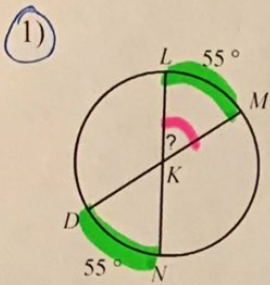
$$360 - 130 - 105 - 70 = 55$$

$$X = \frac{130 - 55}{2}$$

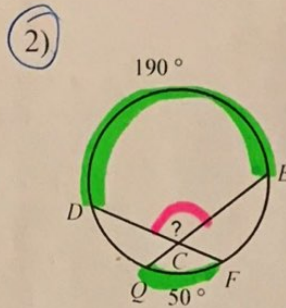
$$X = \frac{75}{2} = 37.5^\circ$$

4.3 - BACK OF NOTES

Find the measure of the arc or angle indicated. Assume that lines which appear tangent are tangent.



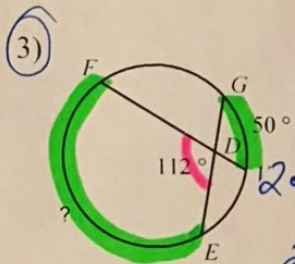
55°



120°

$$X = \frac{\text{Arc} + \text{Arc}}{2}$$

$$X = \frac{50 + 190}{2}$$

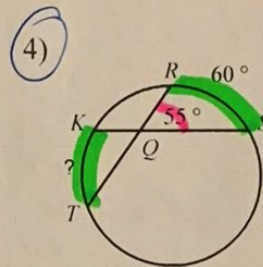


174°

$$2 \cdot 112 = \frac{50 + X}{2}$$

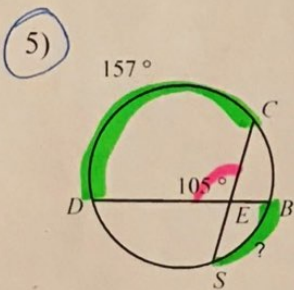
$$224 = 50 + X$$

$$X = 174$$



50°

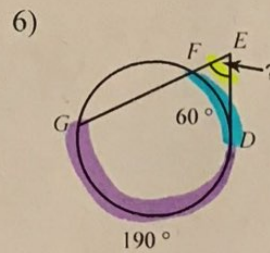
$$55 = \frac{60 + X}{2}$$



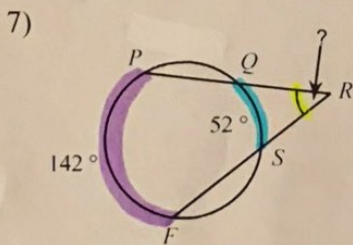
53°

$$X = \frac{\text{Arc} + \text{Arc}}{2}$$

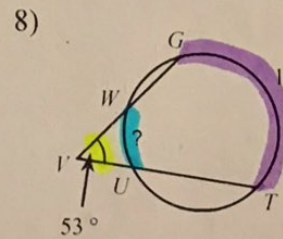
$$105 = \frac{157 + X}{2}$$



$$X = \frac{190 - 60}{2}$$



45°



44°

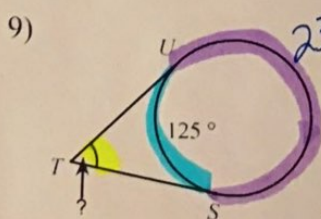
$$2 \cdot 53 = \frac{150 - X}{2}$$

$$106 = 150 - X$$

$$-150 \quad -150$$

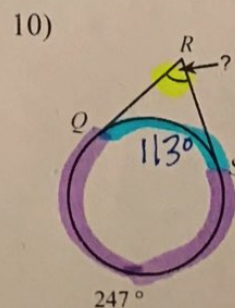
$$\frac{-44}{-1} = \frac{-X}{-1}$$

$$44 = X$$



55°

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



67°

$$X = \frac{247 - 113}{2}$$