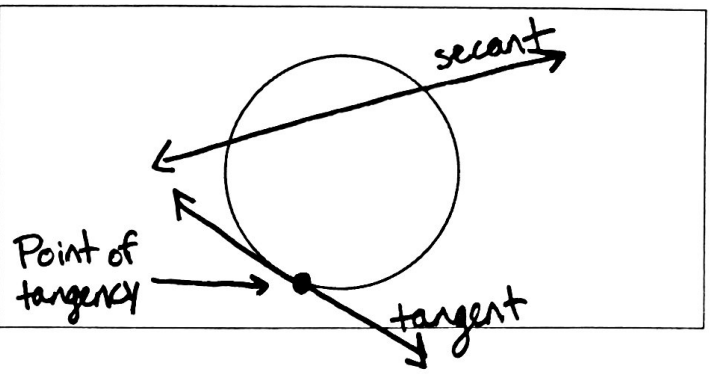
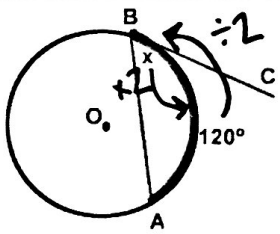
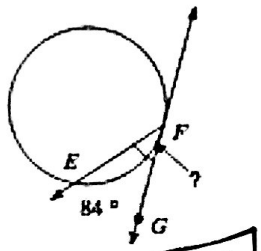
9.2 Circumscribed Angles

Secant: Line through the circle	
Tangent: Line that intersects circle at one point	
Point of Tangency: Point where tangent intersects circle	

Tangent-Secant (vertex on circle): The measure of the angle is half the measure of the arc	

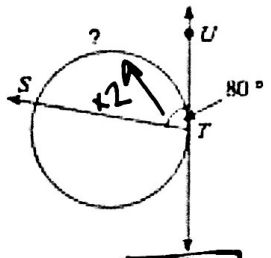
1) Find the measure of the arc indicated.

a.



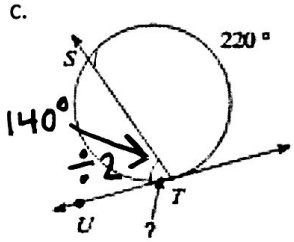
$\frac{84}{2} = \boxed{42^\circ}$

b.



$80 \cdot 2 = \boxed{160^\circ}$

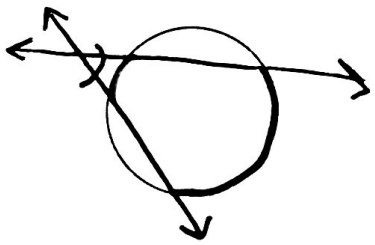
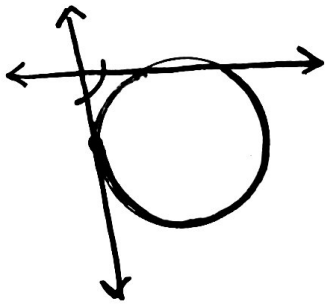
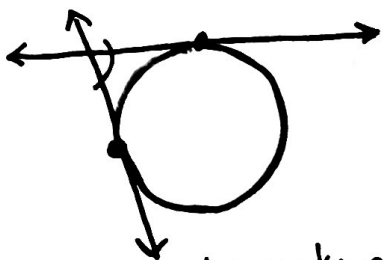
c.



$360 - 220 = 140$

$\frac{140}{2} = \boxed{70^\circ}$

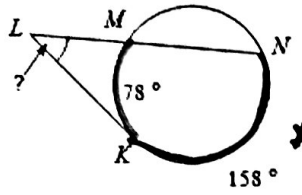
A **circumscribed angle** is an angle that is formed around a circle. It can be constructed in any of the three following ways.

Two Secants	Secant-Tangent	Two Tangents
		 *Two tangents make a full circle

Rule: Measure of angle $= \frac{(\text{Big arc} - \text{little arc})}{2}$

2) Find the measure of the arc or angle indicated.

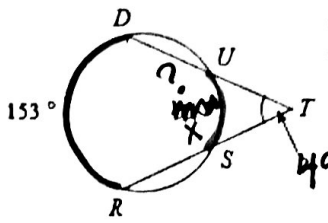
a)



$\frac{(158-78)}{2} = \boxed{40^\circ}$

* Put parentheses around top

b)



$2 \cdot \frac{(153-x)}{2} = 49 \cdot 2$

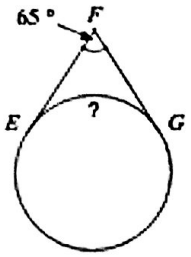
$153 - x = 98$

$-153 \quad -153$

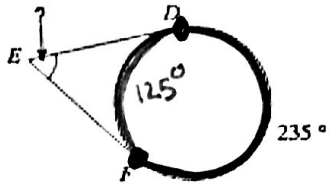
$-x = -55$

$x = \boxed{55^\circ}$

c)



d)

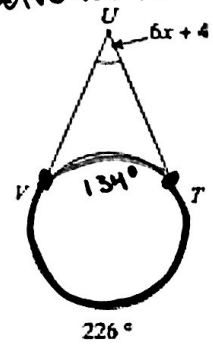


$360 - 235 = 125$

$\frac{(235-125)}{2} = \boxed{55^\circ}$

* Two tangents make a full circle

e) Solve for x.



$360 - 226 = 134$

$\frac{(226-134)}{2} = 6x+4$

$46 = 6x+4$

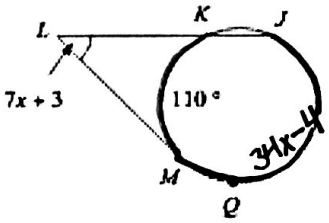
$-4 \quad -4$

$42 = 6x$

$\boxed{7 = x}$

f) $\overset{\frown}{mJQM} = 34x - 4$

Find $\overset{\frown}{mJQM}$



$2 \cdot \frac{(34x-4-110)}{2} = (7x+3)2$

$34x - 114 = 14x + 6$

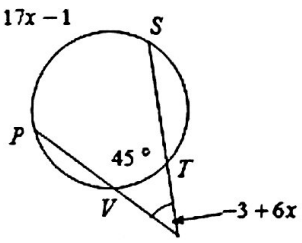
$-14x \quad +114 \quad -14x \quad +114$

$\frac{20x}{20} = \frac{120}{20}$

$x = 6$

$\overset{\frown}{mJQM} = 34(6) - 4 = \boxed{200^\circ}$

g)



$2 \cdot \frac{(17x-1-45)}{2} = (-3+6x)2$

$17x - 46 = -6 + 12x$

$-12x \quad +46 \quad +46 \quad -12x$

$\frac{5x}{5} = \frac{40}{5}$

$\boxed{x = 8}$

h) Find $m\angle CET$