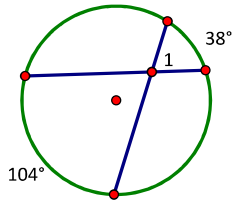
# Circles – Internal, External Tangent Properties

G.C.A.2 Hw Section 13.4 Name_____

Find the measure of each variable, numbered angle or arc.

1.

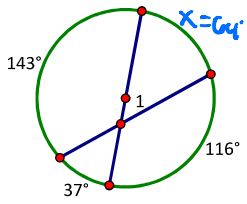



$m\angle 1 = \frac{1}{2}(38 + 104)$

$m\angle 1 = \frac{1}{2}(142)$

$m\angle 1 = 71°$

2.




$x + 143° + 116° + 37° = 360°$

$x + 296° = 360°$

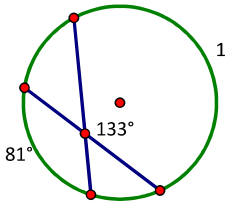
$x = 64°$

$m\angle 1 = \frac{1}{2}(64 + 37)$

$m\angle 1 = \frac{1}{2}(101)$

$m\angle 1 = 50.5°$

3.

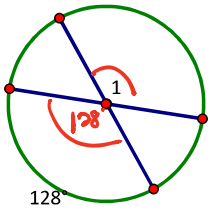



$133° = \frac{1}{2}(m\overset{\frown}{1} + 81°)$

$266° = m\overset{\frown}{1} + 81$

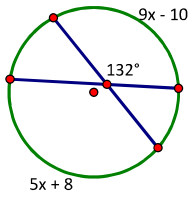
$185° = m\overset{\frown}{1}$

4.




$m\angle 1 = 128°$

5.



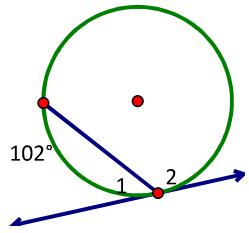

2. 2. $132 = \frac{1}{2}[(9x - 10) + (5x + 8)]$

$264 = 14x - 2$

$266 = 14x$

$19 = x$

6.



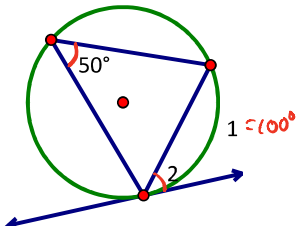

$m\angle 1 = \frac{1}{2}(102°)$

$m\angle 1 = 51°$

$m\angle 2 + 51° = 180°$

$m\angle 2 = 129°$

7.

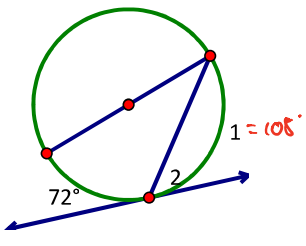



$50° = \frac{1}{2} m\overset{\frown}{1}$

$100° = m\overset{\frown}{1}$

$m\angle 2 = 50°$

8.




$m\overset{\frown}{1} + 72° = 180°$

$m\overset{\frown}{1} = 108°$

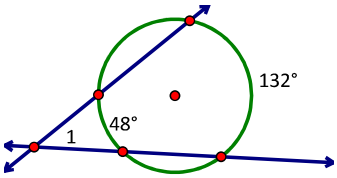
$m\angle 2 = \frac{1}{2}(108°)$

$m\angle 2 = 54°$

# Circles – Internal, External Tangent Properties

G.C.A.2 Hw Section 13.4 Name_____

9.

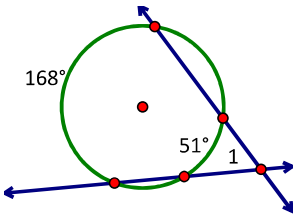



$m\angle 1 = \frac{1}{2}(132° - 48°)$

$m\angle 1 = \frac{1}{2}(84°)$

$m\angle 1 = 42°$

10.

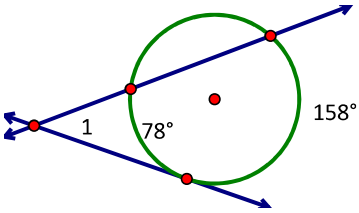



$m\angle 1 = \frac{1}{2}(168° - 51°)$

$m\angle 1 = \frac{1}{2}(117)$

$m\angle 1 = 58.5°$

11.

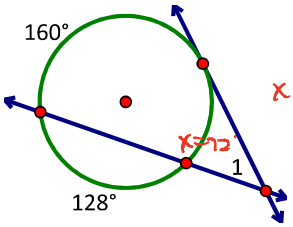



$m\angle 1 = \frac{1}{2}(158° - 78°)$

$m\angle 1 = \frac{1}{2}(80°)$

$m\angle 1 = 40°$

12.




$x + 160° + 128° = 360°$

$x + 288° = 360°$

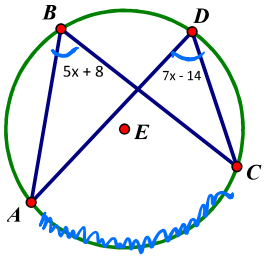
$x = 72$

$m\angle 1 = \frac{1}{2}(160 - 72)$

$m\angle 1 = \frac{1}{2}(88)$

$m\angle 1 = 44°$

13. Find x and $m\angle ABC$




$5x + 8 = 7x - 14$

$8 = 2x - 14$

$22 = 2x$

$11 = x$

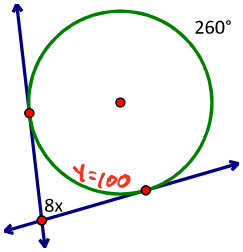
$m\angle ABC = 5x + 8$

$= 5(11) + 8$

$= 55 + 8$

$m\angle ABC = 63°$

14.




$260° + y = 360°$

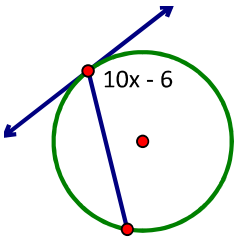
$y = 100°$

$8x = \frac{1}{2}(260° - 100°)$

$16x = 160°$

$x = 10$

15.



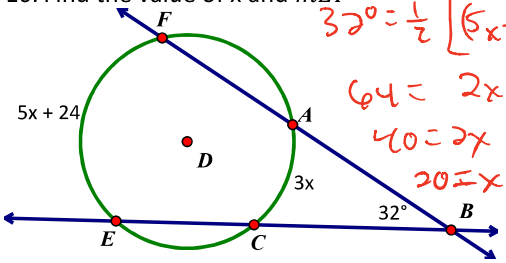

$10x - 6 = \frac{1}{2}(228°)$

$10x - 6 = 114$

$10x = 120$

$x = 12$

16. Find the value of x and $m\widehat{EF}$




$32° = \frac{1}{2}[(5x + 24°) - (3x)]$

$64 = 2x + 24$

$40 = 2x$

$20 = x$

$m\widehat{EF} = 5x + 24$

$= 5(20) + 24$

$= 100 + 24$

$m\widehat{EF} = 124°$