Name: _____Key_____

Period: _____

1.) $\overline{AB}$ and $\overline{AE}$ are tangents to the circle below. Find the measures of arcs $\widehat{EB}$ and $\widehat{DC}$.

Enriched

Theorem: $X + 85 = 180$

$X = 95°$

@rectangle $= 180$

$m\widehat{EB} = 95°$

$m\widehat{EDB} = 360 - 95$

$= 265°$

Theorem: $angle = \frac{1}{2}(arc \pm arc)$

$112 = \frac{1}{2}(95° + y)$

$224 = 95 + y$

$m\widehat{DC} = |29| = y$

Standard

Let F be the center

$X = 112°$

$m\widehat{EB} = 112°$

$m\widehat{DC} = 112°$

Theorems: Central angles = arcs

Vertical Angles are equal

**2.)** Find the following measurements if regular pentagon PENTA is inscribed in $\odot X$.

Pentagon

a.) $m\widehat{ET} = 140°$

$\frac{360}{5} = 72$

$\widehat{EN} + \widehat{NT}$

b.) $m\angle P = 108°$

$\angle P = \frac{1}{2}(\widehat{EA})$ or

$= \frac{1}{2}(72 \cdot 3)$

$= 108$

Polygon Angle

Sum : $180(n-2)$

$180(5-2)$

$540°$

$540 \div 5 \, angles = 108°$

3.) A, B, C and D are points on the circumference of a circle. AC is a diameter of the circle and $\angle BAC = 65°$

$65 \cdot 2 = 130° = m\widehat{BC}$

a.) x = $65°$

$\frac{130 - 65}{2}$ or

$\angle A = 65$

b.) y = $25°$

$180 - 130 = 50$

$\frac{50}{2} = 25$

Inscribed angle $= \frac{1}{2} \cdot arc$

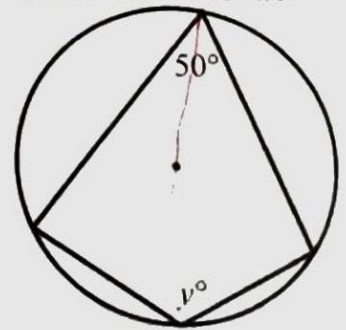**4.)** In the diagram below, $\overline{EA}$ and $\overline{SA}$ are tangent to $\odot P$. If $m\widehat{EYS} = 252°$, find the $m\angle A$.

So 90° and equal
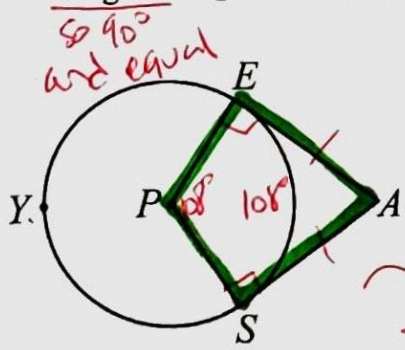
$360 - 252 = 108°$

Enriched

Theorem $108 + \angle A = 180$

$m\angle A = 72°$

Standard

$\angle P = 108$ central Angle = Arc

Quadrilateral

Interior Angle Sum

$360 - 108 - 90 - 90 = 72°$

$m\angle A = 72°$
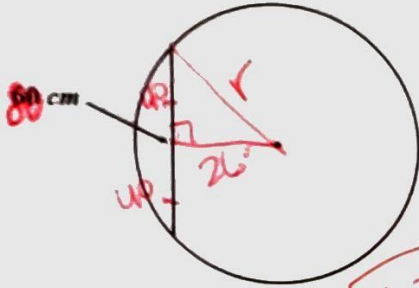

5.) The diagram shows a circle with center O.

a.) y = $130°$

Theorem

$Y + 50 = 180$

$Y = 130°$

b. What do you know about the remaining 2 angles?

They are supplementary add up to 180°

bisected **right angle**
distance ∠B=45°

6.) The circle below has a 80 cm chord that is 26 cm away from the center. Find the radius of the circle. <u>You must show your work for full credit</u>.
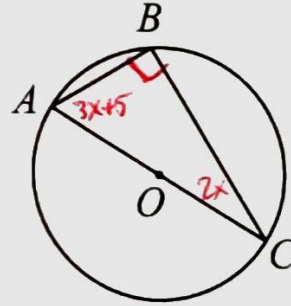
7.) $\overline{AC}$ is a diameter of circle O, $m\angle A = (3x+5)°$, and $m\angle C = (2x)°$. Find the $m\angle C$.

80 cm

r

UP≥

26°

UP =

distance from center to chord is ⊥ and bisects chord

$40^2 + 26^2 = r^2$

$r = 47.7 \text{ cm}$

B

A 3x+5

O 2x

C

$3x+5+2x=90$

$5x+5=90$

$x=17$

$m\angle C = 2x = 34°$
$2(17)$

Inscribed Triangle with diameter is a Right △

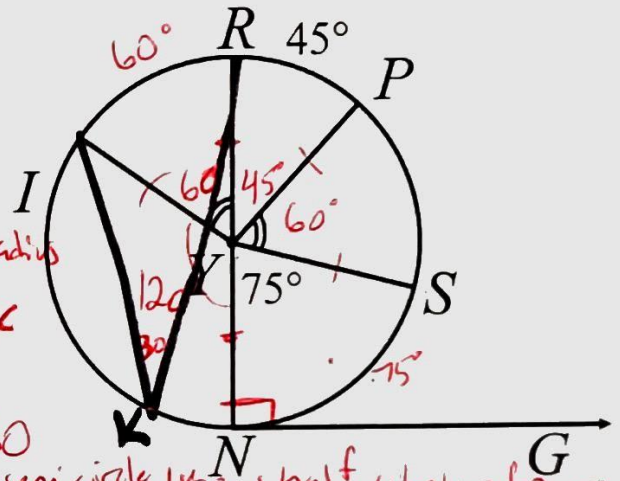
3.) Given: ⊙Y (Y is the center of the circle)

$\overline{NG}$ is a tangent

$\overline{RN}$ is a diameter

Find each of the following (try finding them in order, a-h):

60° R 45°
                P
I 60 45
              60°
        120 Y 75° S
              30
                    75°

N G

a.) $m\angle RNG$ ___90°___ tangents are ⊥ to radius

b.) $m\widehat{NS}$ ___75°___ } Central angles = arc

c.) $m\angle RYP$ ___45°___

d.) $m\angle PYS$ ___60°___ 180-45-75=60
Diameter makes semicircle 180° is half whole of 360°

e.) $m\widehat{IN}$ ___120°___ 360-75-60-45-60=120° or 180-60=120°

f.) $m\angle IYP$ ___105°___ 60+45

g.) $m\widehat{RIS}$ ___255°___ Arc Addition postulate
60°+120°+75°=255°

h.) $m\widehat{RN}$ ___180°___

i.) $m\angle IKR =$ ___30°___ Inscribed Angles = ½ arc
60÷2=30
2(ins ang) = arc