MAY 18, 2017

UNIT 8: CIRCLE GEOMETRY

8.3: PROPERTIES OF ANGLES IN A CIRCLE

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MATH 9

WHAT'S THE POINT OF TODAY'S LESSON?

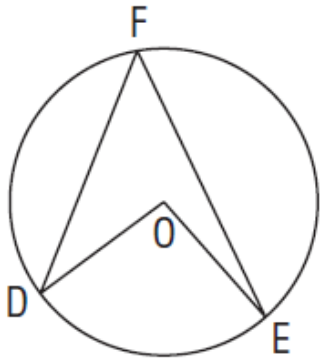
We will continue working on the Math 9 Specific Curriculum Outcome (SCO) "Shape and Space 1" OR "SS1" which states:

"Solve problems and justify the solution strategy using circle properties, including:

* **the perpendicular from the centre of a circle to a chord bisects the chord;**
* **the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc;**
* **the inscribed angles subtended by the same arc are congruent;**
* **a tangent to a circle is perpendicular to the radius at the point of tangency."**

VOCABULARY:

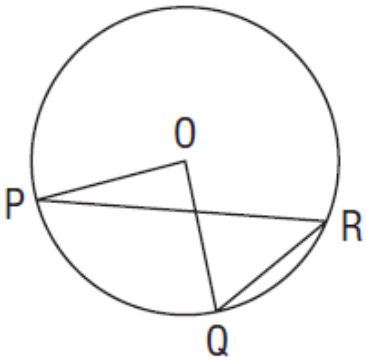
4. CENTRAL ANGLE AND INSCRIBED ANGLE PROPERTY (CIAP): In a circle, the measure of a central angle subtended by an arc is TWICE the measure of an inscribed angle subtended by the SAME arc.



$\angle O = 2\angle F$

OR

$\angle F = \frac{1}{2}\angle O$



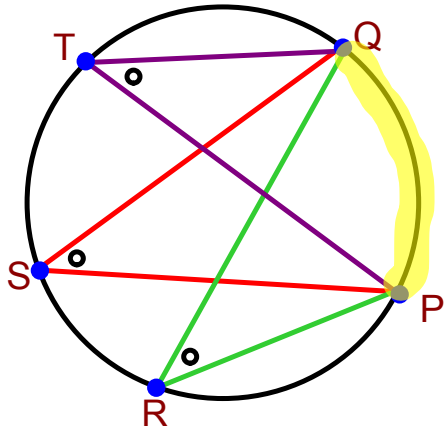
$\angle O = 2\angle R$

OR

$\angle R = \frac{1}{2}\angle O$

VOCABULARY:

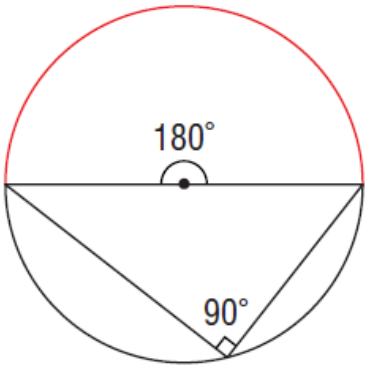
5. INSCRIBED ANGLES PROPERTY (IAP): In a circle, ALL inscribed angles subtended by the SAME arc are congruent (equal).

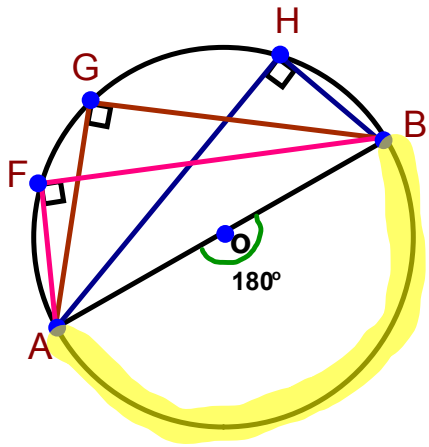


$\angle R = \angle S = \angle T$

VOCABULARY:

6. ANGLES IN A SEMICIRCLE PROPERTY (ASP): All inscribed angles subtended by a semicircle are RIGHT angles.





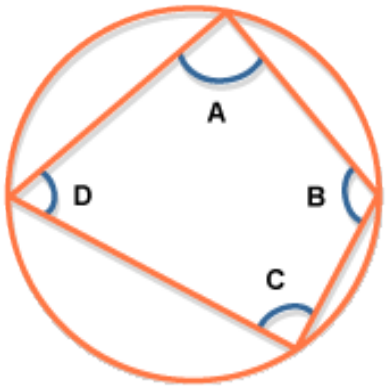
This makes sense - think of CIAP; an inscribed angle is half the central angle when the are subtended by the same arc.

$\angle F = \angle G = \angle H = 90^\circ$

VOCABULARY:

7. OPPOSITE ANGLES IN A CYCLIC QUADRILATERAL PROPERTY (CQP):

The opposite angles in a cyclic quadrilateral (a quadrilateral whose vertices all touch the circumference of a circle) add up to 180^{O}.



$\angle A + \angle C = 180^{O}$

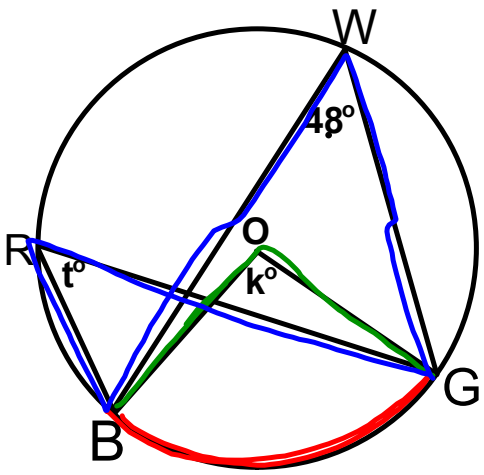
$\angle B + \angle D = 180^{O}$

EXAMPLE: USING INSCRIBED AND CENTRAL AN

Point O is the center of a circle.
Determine the values of k° and t°.

$\angle BOG = 96°$ (CIAP)

$\angle BRG = 48°$ (IAP)

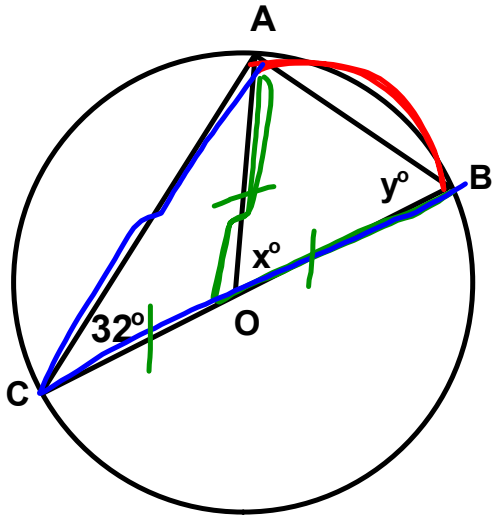


EXAMPLE: APPLYING THE ANGLES IN A SEMICIRCLE P

Point O is the center of the circle.
Determine the values of x° and y°.

$\angle AOB = 64^\circ$ (CIAP)

$\angle ABO = 58^\circ$ (ITT/SATT)



EXAMPLE: APPLYING THE ANGLES IN A SEMICIRCLE P

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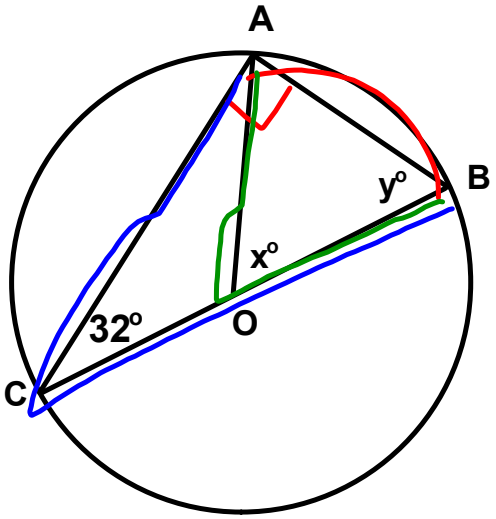


$\angle BAC = 90^\circ$ (ASP)

$\angle ABO = 58^\circ$ (SATT)

$\angle AOB = 64^\circ$ (CIAP)

EXAMPLE: DETERMINING ANGLES IN AN INSCRIBED TI

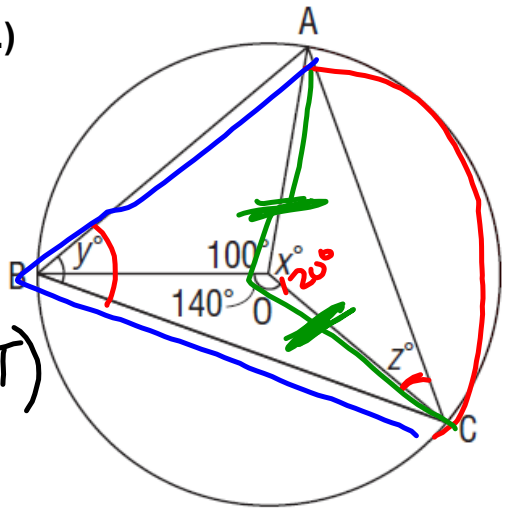
Determine the values of x°, y°, and z°.
(HINT: There are 360° in a circular rotation.)

$\angle AOC = 120°\ (360-240)$

$\angle x° = 120°\ (\ ''\ \ '')$

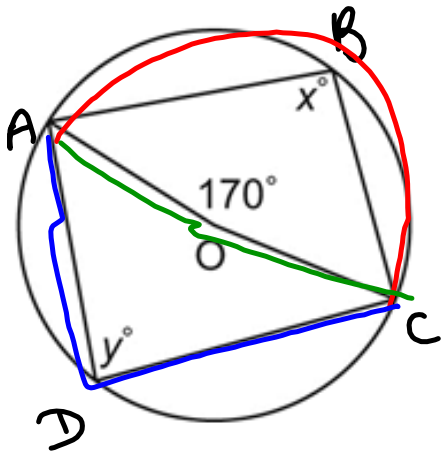
$\angle z° = 30°\ (\text{ITT} \mid \text{SATT})$

$\angle y° = 60°\ (\text{CIAP})$



WARM-UP: DETERMINING ANGLES IN A CYCLIC QU

Point O is the center of the circle.
Determine the values of x° and y°.

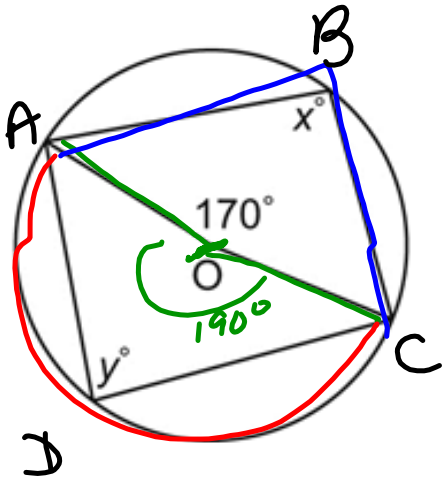


$\angle y^\circ = 85^\circ$ (CIAP)

$\angle x^\circ = 95^\circ$ ((QP)

WARM-UP: DETERMINING ANGLES IN A CYCLIC QU

Point O is the center of the circle.
Determine the values of x° and y°.



$\angle AOC = 190°$ (360 - 170)

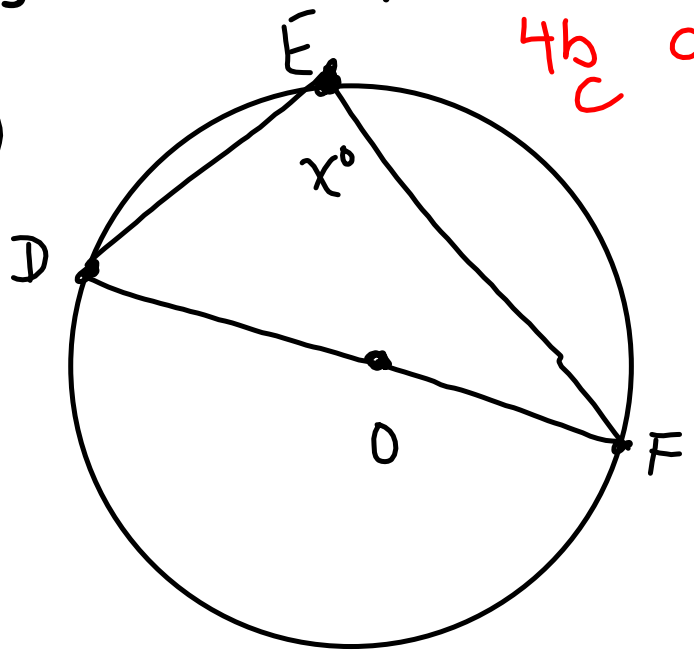
$\angle x° = 95°$ (CIAP)

$\angle y° = 85°$ ((QP)

HOMEWORK QUESTIONS???

(pages 410 / 411, #3 TO #6 and #11)

4.b)

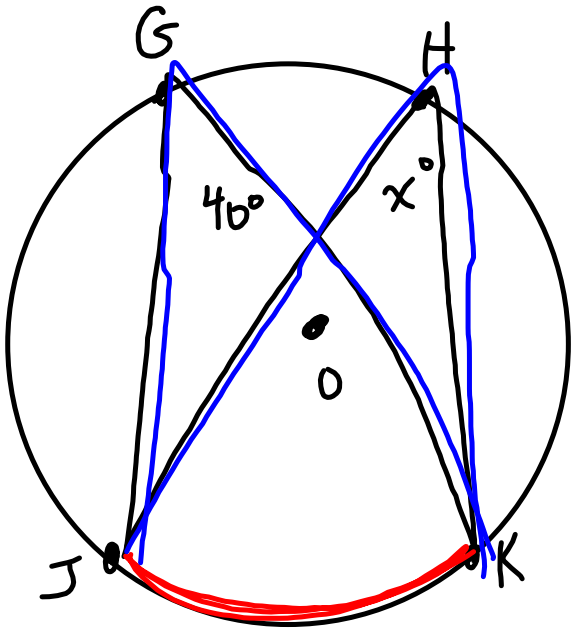


4b a c

$\angle x^\circ = 90^\circ$ (ASP)

HOMEWORK QUESTIONS???
(pages 410 / 411, #3 TO #6 and #11)

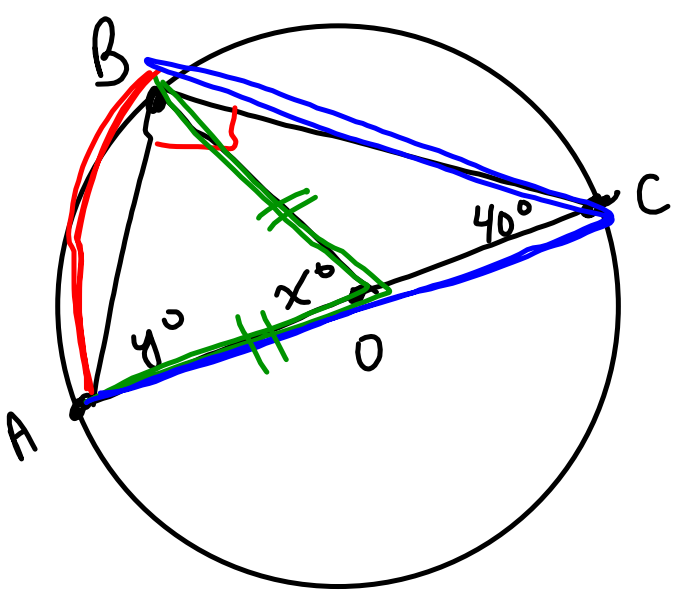
4. c)



$\angle x° = 40°$ (IAP)

HOMEWORK QUESTIONS???
(pages 410 / 411, #3 TO #6 and #11)

6.a)



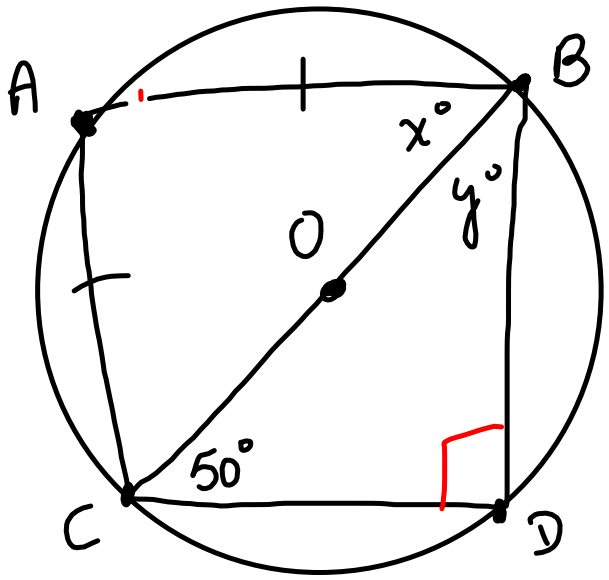
$\angle ABC = 90°$ (ASP)

$\angle y° = 50°$ (SATT)

$\angle x° = 80°$ (CIAP)

HOMEWORK QUESTIONS???
(pages 410 / 411, #3 TO #6 and #11)

11. b)



$\angle BDC = 90°$ (ASP)

$\angle y° = 40°$ (SATT)

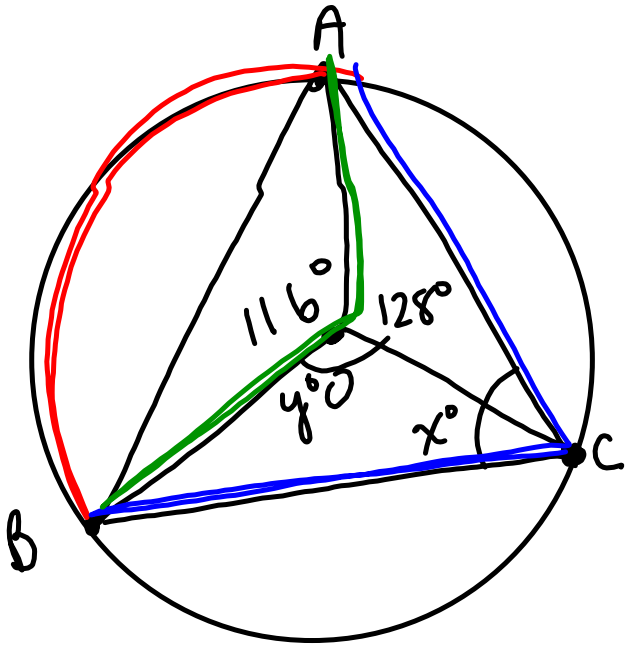
$\angle BAC = 90°$ (ASP)

$\angle x° = 45°$ (ITT/SATT)

HOMEWORK QUESTIONS???

(pages 410 / 411, #3 TO #6 and #11)

11. c)



$\angle y° = 116°$ (360 - 244)

$\angle x° = 58°$ (CIAP)

CONCEPT REINFORCEMENT:

WORKSHEET: "8.3 Exercise - Angles in a Circle", #9 and #10

Attachments

Worksheet - Angles in a Circle.doc