

Mathematics II Resources for EOC Remediation

G-C Circles Cluster:

G-C.A.2

G-C.A.3

G-C.B.5

The information in this document is intended to demonstrate the depth and rigor of the Nevada Academic Content Standards. The items are **not** to be interpreted as indicative of items on the EOC exam. These are a collection of standard-based items for students and **only** include those standards selected for the Math II EOC examination.

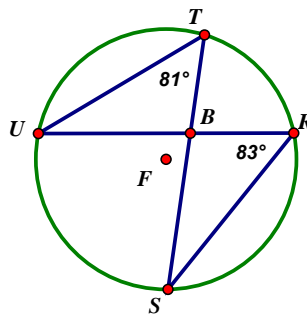
G-C Circles Cluster

G-C.A.2 Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*

1. Circle O has a radius of 8 inches, and \overline{RS} is tangent to the circle at S . T lies both on Circle O and on \overline{OR} . If SR is 15 inches, what is TR ?

Answer: $8^2 + 15^2 = (x+8)^2$ $TR = 9$

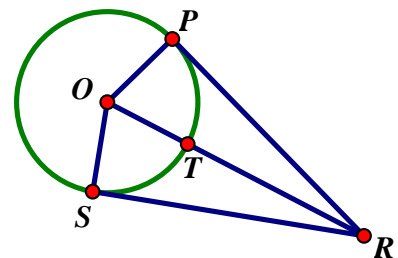
2. What is wrong with this picture?



Answer: Inscribed angles that intercept the same arc must be equal.

3. In the figure at the right, \overline{PR} and \overline{SR} are tangent to Circle O . If $OT = 11$ cm and $PR = 60$ cm, what is the length of \overline{TR} ?

- A. 61 cm B. 49 cm C. 50 cm D. 48 cm



Answer: C

G-C Circles Cluster

4. Use the information provided to answer Part A and Part B for the question below.

The figure shows a circle with center P , and inscribed $\triangle BCD$. The length of \overline{PC} is 10. Let $m\angle CBD = (x)^\circ$ and $m\angle BCD = (x+54)^\circ$.

Part A:

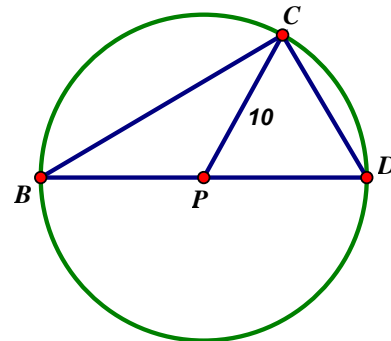
What is the value of x ?

Part B:

Identify each of the true statements about the figure.

Select **ALL** that apply.

- A. The length of \overline{CD} is less than 10.
- B. The length of \overline{CD} is equal to 10.
- C. The length of \overline{CD} is greater than 10.
- D. $\triangle CPD$ is equilateral.
- E. The measure of $\angle CPD$ is less than 60° .
- F. The measure of $\angle CPD$ is greater than 60° .



not to scale

Answer: Part A: 36° , Part B: C and F

5. Use the diagram for parts A, B and C.

Given: The $m\angle UBS = 126^\circ$, $m\angle BRS = 63^\circ$, $m\widehat{UT} = 76^\circ$, and $\overline{TU} \parallel \overline{RS}$

Part A:

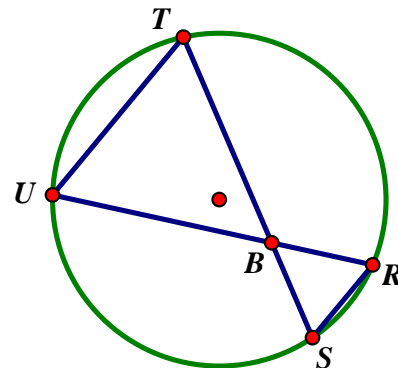
What is the measure of \widehat{RS} ?

Part B:

Find $m\angle UTB$ and $m\angle TUB$.

Part C:

Is $\triangle UTB \cong \triangle RSB$, $\triangle UTB \sim \triangle RSB$ or neither.



Answer: Part A: $\frac{76 + \widehat{RS}}{2} = 54 \Rightarrow m\widehat{RS} = 32^\circ$,

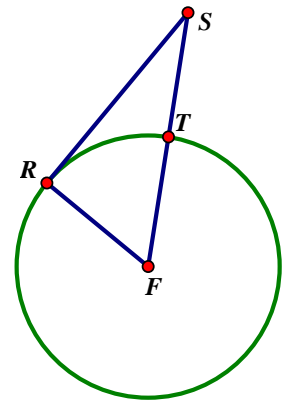
Part B: $m\angle UTB = 63^\circ$, $m\angle TUB = 63^\circ$, Part C:

$\triangle UTB \sim \triangle RSB$

G-C Circles Cluster

6. Maggie and Wei are measuring the distance across a circular fountain indirectly as shown in the diagram.

They find that the length of \overline{RS} is 15 meters and the length of \overline{ST} is 9 meters. \overline{RS} is tangent to circle F and point T is on \overline{FS} . What is the diameter of the fountain?

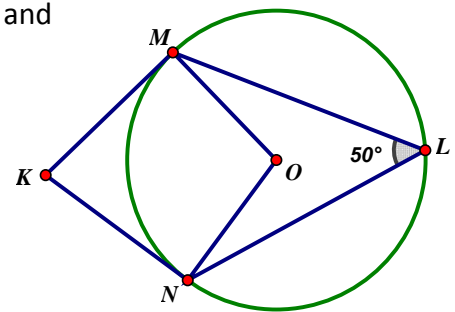


Answer: $x^2 + 15^2 = (x+9)^2$, $x = 8$, 16 meters

7. In the diagram below, \overline{KM} and \overline{KN} are tangent to circle O , and $ML = NL$.

What is $m\angle ONL$?

- A. 15° B. 25° C. 65° D. 90°

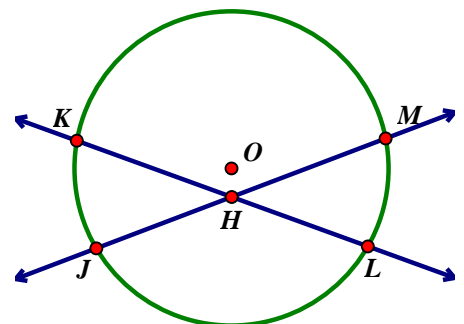


Answer: B

8. In Circle O ,
 $m\widehat{JL} = (6x + 5)^\circ$, $m\widehat{KM} = (10x + 3)^\circ$, and $m\angle JHL = 140^\circ$.

What is the value of x ?

- A. 8.25 B. 9.25 C. 17 D. 18



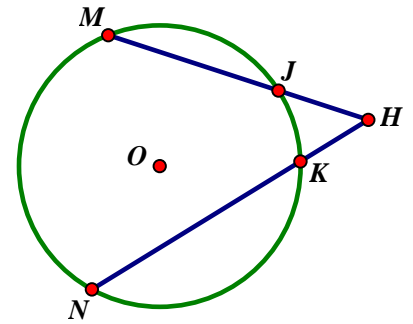
Answer: C

G-C Circles Cluster

9. In the figure at the right, $m\widehat{JK} = 26^\circ$ and $m\widehat{MN} = 130^\circ$.

What is $m\angle H$?

- A. 52° B. 78° C. 104° D. 128°



Answer: A

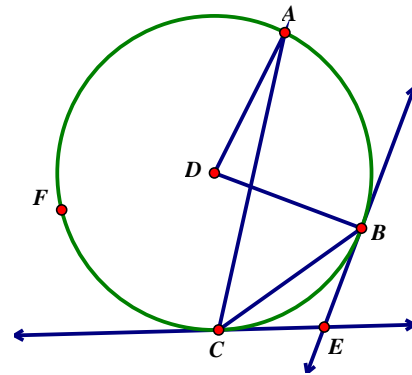
10. Given: Circle D and $m\angle ACB = 44^\circ$. $m\widehat{AFC}$ is three times the measure of \widehat{BC} . \overline{BE} and \overline{CE} are tangent to circle D .

Part A:

Find the measure of \widehat{AC} .

Part B:

Find the measure $\angle BEC$.



Answer: Part A: $88 + 3x + x = 360 \Rightarrow x = 68 \Rightarrow m\widehat{AC} = 156^\circ$

Part B: $m\widehat{BC} = 68 \Rightarrow m\angle BEC = \frac{292 - 68}{2} = 112^\circ$

G-C Circles Cluster

G-C.A.3 Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.

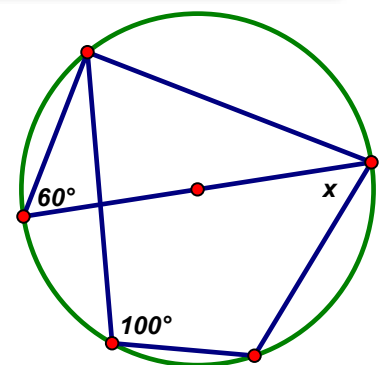
1. Select **ALL** statements that are valid when a triangle is inscribed in a circle.
 - A. the circle is circumscribed about the triangle.
 - B. the perpendicular bisectors of the triangle may be constructed to find the center of the circle.
 - C. the center of the circumscribed circle must always be in the interior of the triangle.
 - D. the vertices of the triangle are equidistant from the center of the circle.
 - E. the triangle must be isosceles.

Answer: A, B and D

2. If a circle is inscribed in a triangle, what are the possible locations of the circles center?
 - A. Only in the interior of the triangle.
 - B. Either in the interior or on the triangle.
 - C. Always in the exterior of the triangle.
 - D. It can be in the interior, exterior or on the triangle.

Answer: A

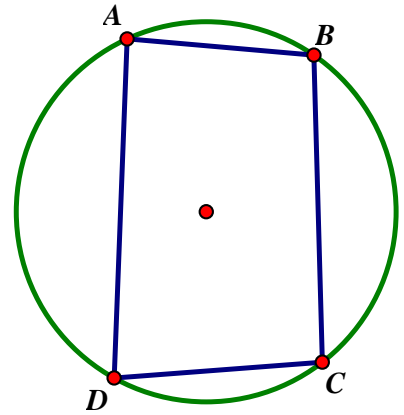
3. What is the value of x ?



Answer: $100 + 30 + x = 180 \Rightarrow x = 50^\circ$

G-C Circles Cluster

4. If $m\angle A = 2x + 5$ and $m\angle C = 3x - 20$, what is $m\angle A$ and $m\angle C$?



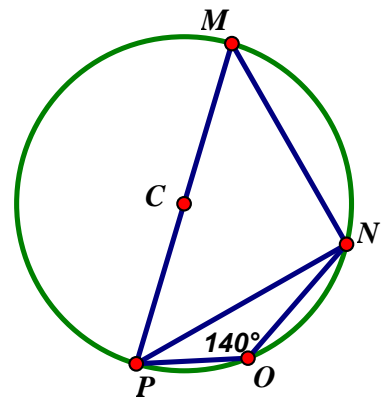
Answer: $2x + 5 + 3x - 20 = 180 \Rightarrow x = 39$ $m\angle A = 83^\circ, m\angle C = 97^\circ$

5. Using the provided diagram, answer the following.

Part A: Which angle(s), if any, are right angles?

Part B: What is the sum of $m\angle PMN$ and $m\angle NOP$?

Part C: Identify the angle with a measure of 50° .

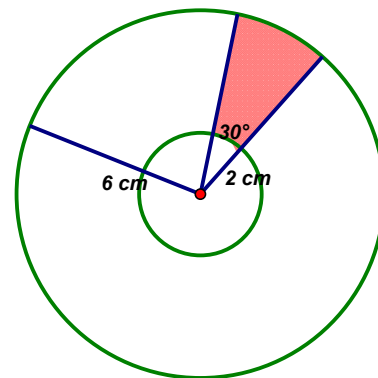


Answer: Part A: $\angle MNP$, Part B: 180° , Part C: $\angle MPN$

G-C Circles Cluster

G-C.B.5 Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

1. In the figure at the right, the larger circle has a radius of 6 cm, and the smaller circle has a radius of 2 cm.

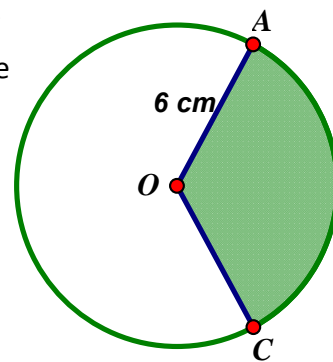


What is the **approximate** area of the shaded region?

- A. 2.1 cm^2 B. 3.4 cm^2 C. 4.2 cm^2 D. 8.4 cm^2

Answer: D

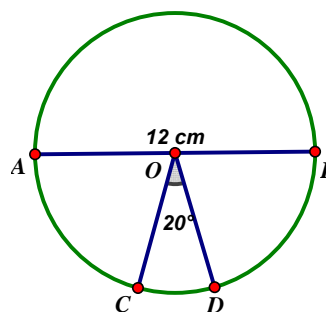
2. In the diagram at the right of Circle O , the area of the shaded sector AOC is $12\pi \text{ cm}^2$ and the length of \overline{OA} is 6 inches. Determine and state $m\angle AOC$ in radians.



Answer: $\frac{2}{3}\pi$ radians

3. In the diagram below of Circle O , diameter \overline{AB} and radii \overline{OC} and \overline{OD} are drawn. The length of \overline{AB} is 12 cm and the measure of $\angle COD$ is 20 degrees.

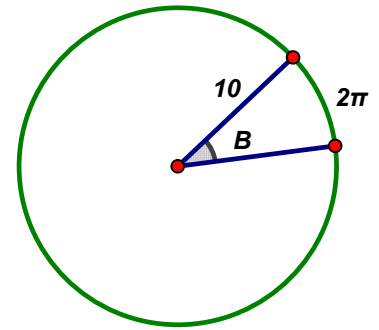
If $\widehat{AC} \cong \widehat{BD}$, find the area of sector BOD in terms of π .



Answer: $8\pi \text{ cm}^2$

G-C Circles Cluster

4. In the diagram at the right, the circle shown has radius 10. Angle B intercepts an arc with a length of 2π .



What is the measure of angle B , in radians?

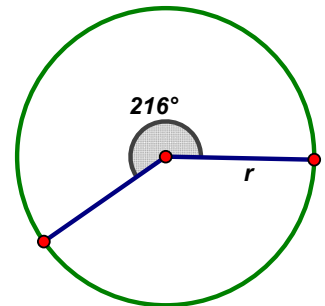
- A. $10 + 2\pi$ B. 20π C. $\frac{\pi}{5}$ D. $\frac{5}{\pi}$

Answer: C

5. Find the ratio of the arc length to the sector area of the circle with radius, r and central angle, x° .

Answer: 2π

6. The perimeter of a sector is 202 cm. Find the area of the sector to the nearest whole number if its central angle is 216° .



Answer: $A = \frac{216}{360}(\pi(35.01)^2) \approx 2310 \text{ cm}^2$
