

Circle Review Sheet

1. Find the center and radius of the circle with the following equation:

$$x^2 + 8y + 10 + y^2 - 4x = 6$$

$$x^2 - 4x + y^2 + 8y = -4$$

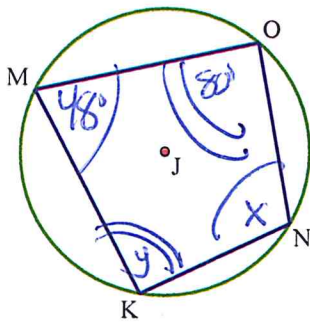
$$x^2 - 4x + 4 + y^2 + 8y + 16 = -4 + 4 + 16$$

$$(x-2)^2 + (y+4)^2 = 16$$

$(\frac{-b}{2a}) = 4$
 $(\frac{-c}{2a}) = 16$

Center: $(2, -4)$
radius: 4

2. In the diagram below, quadrilateral MONK is inscribed in circle J, $m\angle KMO = 48^\circ$ and $m\angle MON = 80^\circ$. Find the measures of $m\angle KNO$ and $m\angle MKN$.



Opposite angles add to 180°

$$x + 48 = 180$$

$$-48 \quad -48$$

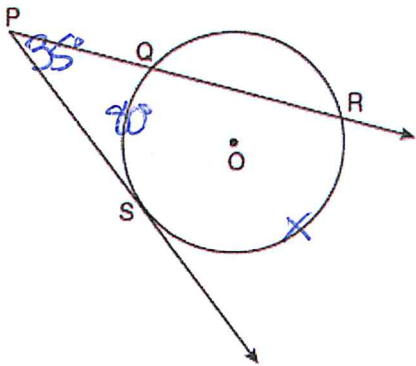
$$x = 132$$

$$y + 80 = 180$$

$$-80 \quad -80$$

$$y = 100$$

3. In the diagram below, \overline{PS} is a tangent to circle O at point S, \overline{PQR} is a secant, $m\angle QPS = 35^\circ$, $QS = 80$, find $m\widehat{RS}$



$$2(\angle A) = \text{major} - \text{minor}$$

$$2(35) = x - 80$$

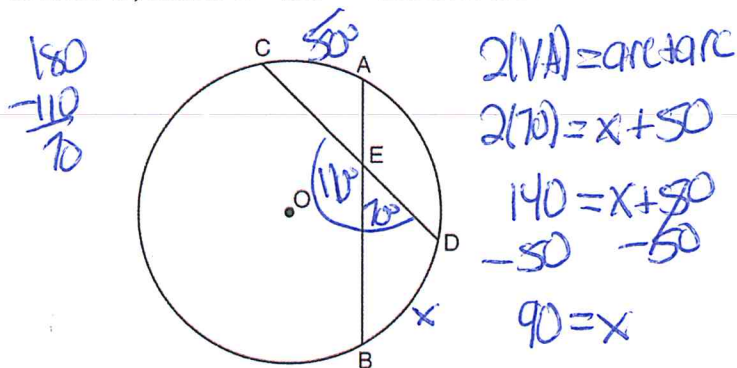
$$70 = x - 80$$

$$+80 \quad +80$$

$$150 = x$$

(Not drawn to scale)

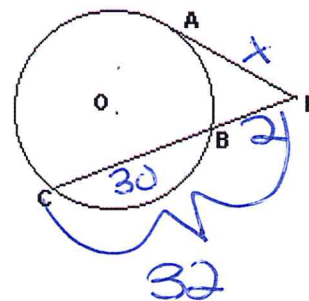
4. In the diagram below of circle O , chords \overline{AB} and \overline{CD} intersect at E .



If $m\angle CEB = 110^\circ$ and $m\widehat{AC} = 50$, what is $m\widehat{DB}$?

5. In the diagram, \overline{AP} is a tangent and \overline{PBC} is a secant to circle O . If $\overline{PB} = 2$ and $\overline{BC} = 30$, what is \overline{AP} ?

$$\begin{aligned} w \cdot e &= w \cdot e \\ x \cdot x &= 30 \cdot 2 \\ \sqrt{x^2} &= \sqrt{60} \\ x &= 8 \end{aligned}$$

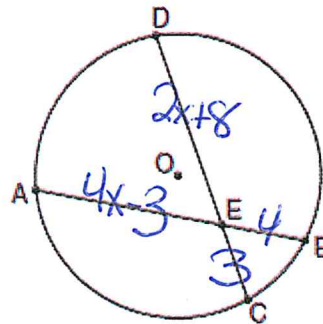


6. In the diagram of circle O below, chord \overline{AB} intersects chord \overline{CD} at E , $DE = 2x + 8$, $EC = 3$, $AE = 4x - 3$, and $EB = 4$.

What is the value of x ?

- 1) 1
2) 3.6

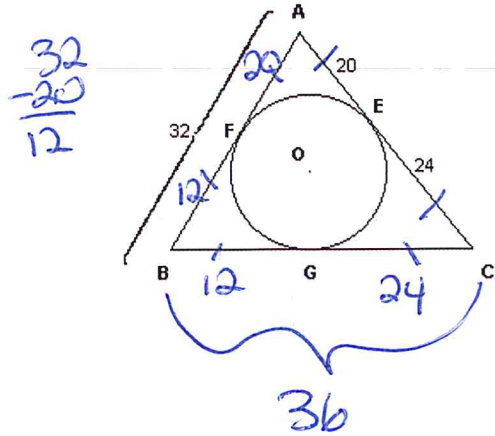
- 3) 5
4) 10.25



$$\begin{aligned} p \cdot p &= p \cdot p \\ 4(4x-3) &= 3(2x+8) \\ 16x-12 &= 6x+24 \\ -6x & \quad -6x \\ 10x-12 &= 24 \\ +12 & \quad +12 \\ 10x &= 36 \\ \frac{10x}{10} &= \frac{36}{10} \\ x &= 3.6 \end{aligned}$$

7. In the diagram, \overline{AFB} , \overline{AEC} , and \overline{BGC} are tangent to circle O at F , E , and G , respectively. If $AB = 32$, $AE = 20$, and $EC = 24$, what is BC ?

$$\overline{BC} = 36$$

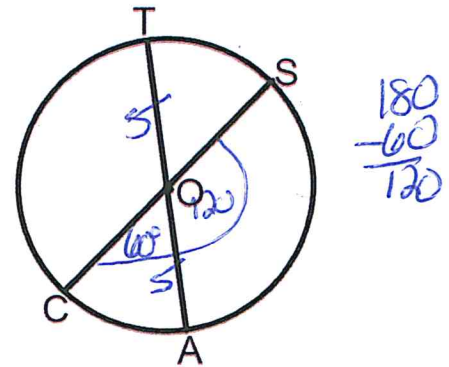


8. In circle O , diameters \overline{TA} and \overline{CS} are drawn. If $m\angle COA = 60$ and $\overline{TA} = 10$ cm, find the area of sector SOA to the nearest hundredth of a square centimeter.

$$A = \frac{\theta}{360} \pi r^2$$

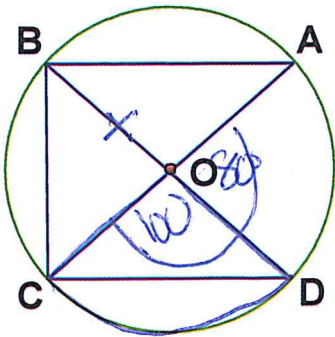
$$A = \frac{120 \pi (5)^2}{360}$$

$$A = 26.18$$



9. In circle O , diameters \overline{BOD} and \overline{COA} intersect at the center of the circle O . If the area of sector $OCD = 240\pi$ square inches and $m\angle AOD = 80$, find the measure of \overline{OB} to the nearest tenth of an inch.

$$\begin{array}{r} 180 \\ -80 \\ \hline 100 \end{array}$$



$$A = \frac{\theta}{360} \pi r^2$$

$$240\pi = \frac{100\pi r^2}{360}$$

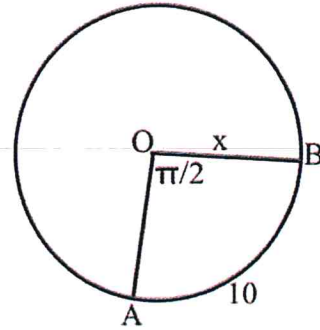
$$\frac{100r^2}{100} = \frac{86400}{100}$$

$$\sqrt{x^2} = \sqrt{864}$$

$$x = 29.4$$

10. In circle O, the measure of central angle AOB is $\frac{\pi}{2}$ radians and the length of arc AB is 10 cm. What is the measure of radius \overline{OB} to the nearest tenth of a cm?

$s = r\theta$
 $2(10) = \frac{\pi}{2} \times 2$
 $20 = \frac{\pi}{2} \times 2$
 $6.4 = x$

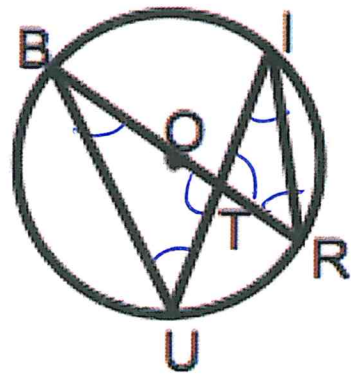


11. In circle O shown below, \overline{BR} is a diameter and chords \overline{BU} , \overline{TU} , and \overline{IR} are drawn.

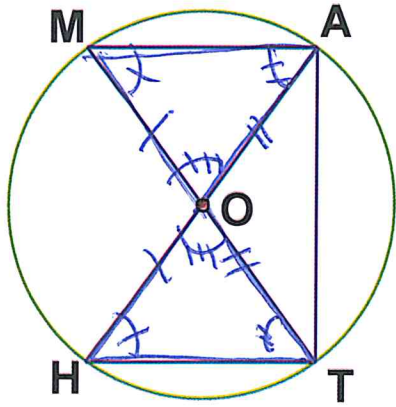
Which of the following statements is not true?

Inscribed to same arc
vertical angles

- 1) $\angle BUI \cong \angle BRI$ ✓
 - 2) $\angle ITR \cong \angle BTU$ ✓
 - 3) $\angle UBT \cong \angle BRI$ ✗
 - 4) $\angle RBU \cong \angle RIU$ ✓
- inscribed to same arc



12. Given: Circle O with diameters \overline{MOT} and \overline{AOH} .
 Prove: $\overline{MA} \cong \overline{HT}$



statements	Reasons
① $\overline{MO} \cong \overline{OT}$ $\overline{AO} \cong \overline{OH}$	① All radii of a circle are congruent
② $\angle M \cong \angle H$ $\angle A \cong \angle T$	② Inscribed angles that intercept the same arc are congruent
③ $\angle MOA \cong \angle HOT$	③ vertical angles are congruent
④ $\triangle MOA \cong \triangle HOT$	④ ASA, ASA, SAS
⑤ $\overline{MA} \cong \overline{HT}$	⑤ CPCTC