

Solutions for Circle Tutorials

Circle 1_2

1. If the radius of the circle is 1cm,

- a. length of the largest chord = **2cm**
- b. perimeter of the circle = **6.28cm**
- c. area of the circle = **3.14cm²**

2. What is the area and perimeter of the unit circle?

3.14m² and 6.28cm

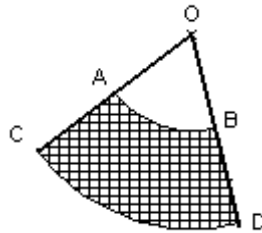
3. The perimeter of a circle is 6π .

- a. Radius of the circle = **3**
- b. Area of the circle = **9π**

4. The area of the circle is 12π .

- a. What is the area of the sector made by two radii with an angle 60° between them ?
 2π
- b. Length of the arc made by the sector
 $2\pi/(3)^{(.5)}$

5. Consider the figure. O is the center of the two circles. Line AB = 1cm, line CD = 2 cm and $\angle AOB = 60^\circ$. Find the area of the shaded region.



Caution: Line AB is not the same as Arc AB. The length of line AB is given as 1cm. The length of arc AB is not given. Similarly, the length of line CD is given as 2cm. Length of arc CD is not given.

$\pi/2$

Circle 2_2

1) What is the length of the chord if the radius of the circle is 5cm and distance between chord and center is 3cm?

8 cm

2) If the length of the chord is 12 cm and the distance between the center and chord is 8 cm, find the radius of the circle.

10 cm

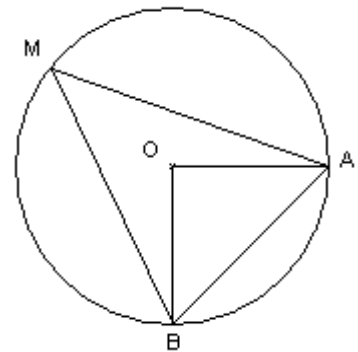
3) O is the center of the circle. AB is the chord. If the length AB is $\sqrt{2}$ times the length of its radius, find the following

- a) measure of the angle $\angle AOB$.
- b) measure of the angle $\angle AMB$
- c) Compare $\angle AMB$ and $\angle OAB$

90

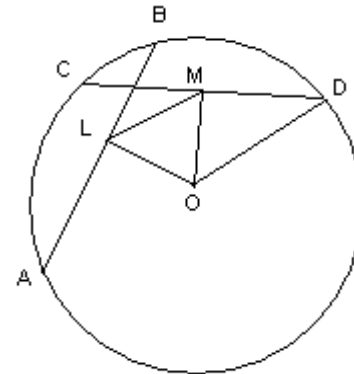
45

they are both the same



4) In the figure, O is the center of the circle. AB and CD are two chords. L and M are the midpoints of the AB and CD respectively. $\triangle LMO$ is an equilateral triangle (all three sides of an equilateral triangle have same length), compare the length of AB and CD.

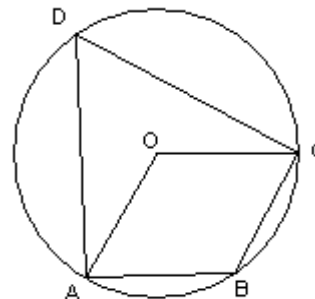
they are both the same



5) In the figure, O is the center of the circle. If $\angle AOC = 120^\circ$ find $\angle ABC$.

Hint: $\angle ADC$ is the inscribed angle subtended by chord AC and ABCD is a cyclic quadrilateral.

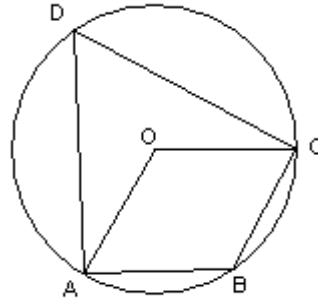
120°



6) In the figure, O is the center of circle . If $\angle AOB = 150^\circ$ then find $\angle AEB$, $\angle ACB$, $\angle ADB$ and $\angle AFB$.

Which of the following is true?

- a) $\angle DBC + \angle FAE = 180^\circ$
- b) $\angle FBC + \angle DAC = 180^\circ$
- c) $\angle AFB + \angle AOB = 180^\circ$
- d) $\angle AFB + \angle AOB = 180^\circ$
- e) $\angle AEB + \angle AOB = 180^\circ$



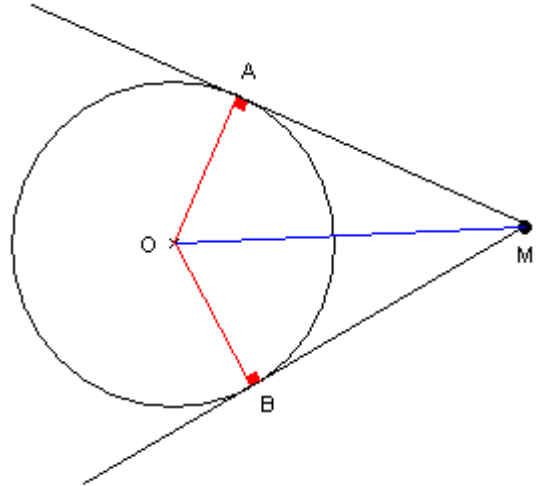
$\angle AEB=75$,
 $\angle ACB=75$,
 $\angle ADB=105$ and
 $\angle AFB=105$.

(d) is the correct answer

Circle 3_2

1) Consider the circle with center O. Let M be a point outside the circle. Suppose MA and MB be the two tangents of the circle at the point A and B respectively, such that $\angle AMB = 45^\circ$, then what is the measure of the angle $\angle AOB$?

135°

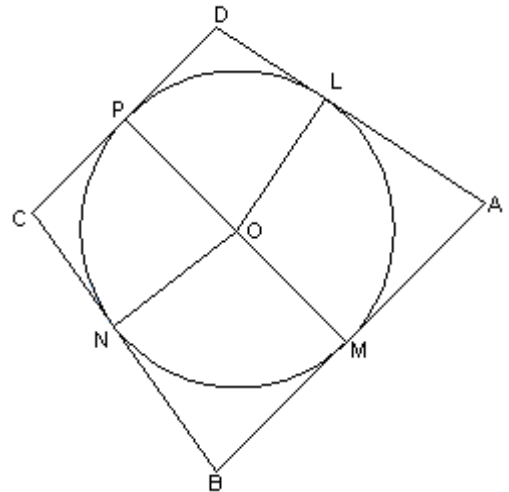


2) Consider the figure. O is the center of the circle. PM is the diameter of the circle.

Hence $\angle POL + \angle MOL = 180^\circ$. If $\angle PDL = 110^\circ$

- a. Find the measure of the $\angle POL$ 70°
- b. Find the measure of $\angle LAM$ 70°
- c. Find the measure of $\angle LOM$. 110°
- d. If $\angle LOM$ and $\angle MON$ congruent angles (i.e., $\angle LOM$ and $\angle MON$ have same measure). What can you say about the angles $\angle MBN$ and $\angle MAL$?

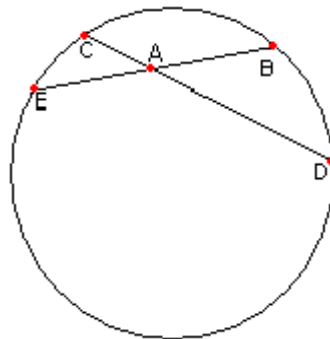
they also have the same angles $= 70^\circ$



3) In the figure, if $AC = 2$ and $AB = 4$, then $AE/AD = ?$

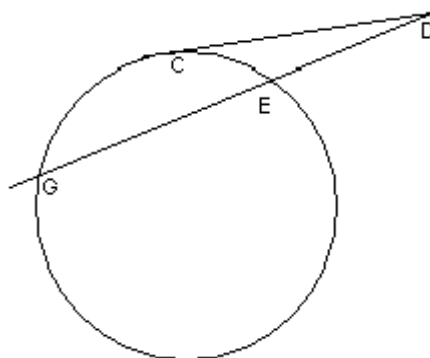
(hint: what can you say about $\triangle ACE$ and $\triangle ABD$. Are they similar?)

0.5



4) In the figure if $DE = 2$ and $EG = 6$, $DC = ?$
 (hint: use one of the formulas given in this document)

4



5) If $ABL = 40^\circ$, then angle $AOB = ?$
 angle $AXB = ?$
 (Hint : $OBL = 90^\circ$. Besides what kind of triangle is $\triangle AOB$?)

80° and 40°

