Curriculum Outcomes:

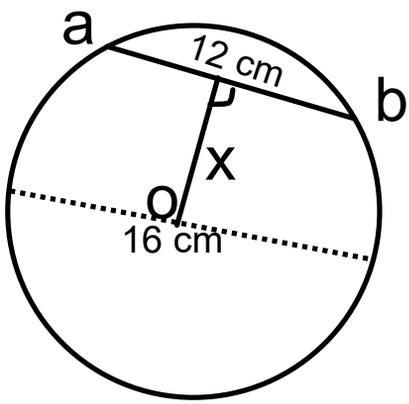
(SS1) Solve problems and justify the solution strategy using circle properties, including: the perpendicular from the centre of a circle to a chord bisects the chord; the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc; the inscribed angles subtended by the same arc are congruent; a tangent to a circle is perpendicular to the radius at the point of tangency.

Student Friendly:
How angles found at the centre of a circle are related to angles formed by two chords found inside the circle.

EXPLAIN YOUR ANSWERS

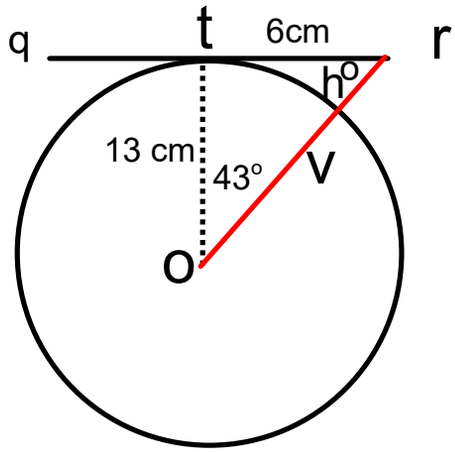
Warm Up

Determine the length of x

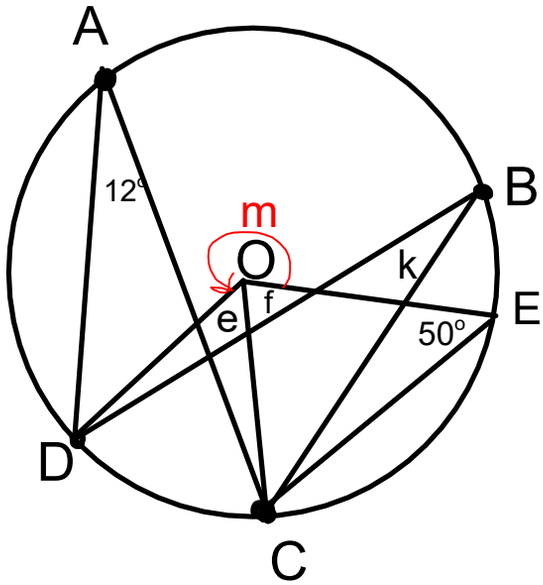


Determine the length of v

Determine h



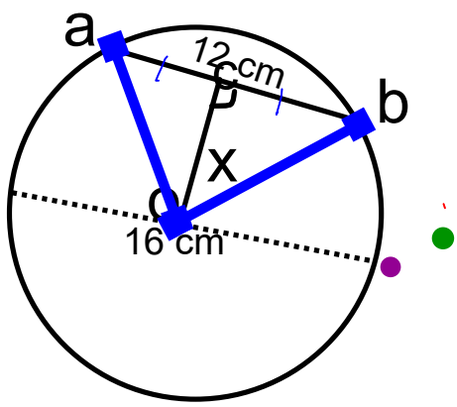
Determine each unknown:



EXPLAIN YOUR ANSWERS

Warm Up

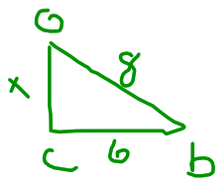
Determine the length of x



$ao = bo = 8$ (radii)

$ac = bc = 6$ (ch P)

$\angle OCB = \angle OCA$ (ch P)



$a^2 = c^2 - b^2$

$a^2 = 8^2 - 6^2$

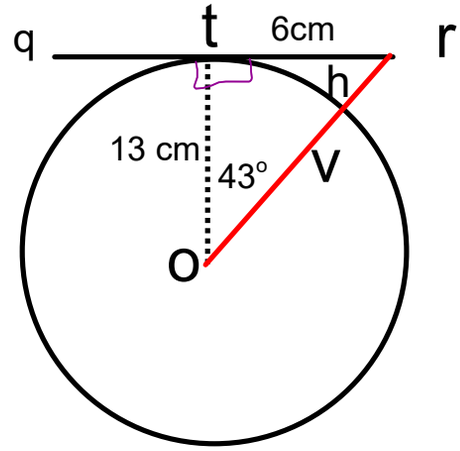
$a^2 = 64 - 36$

$a^2 = 28$

$a = 5.3$

Determine the length of v

Determine h



$\angle OTr = 90°$ (Tang P)

$\angle OTq$

$h = \angle OrT = 47°$ (SATT)

$V = hyp$

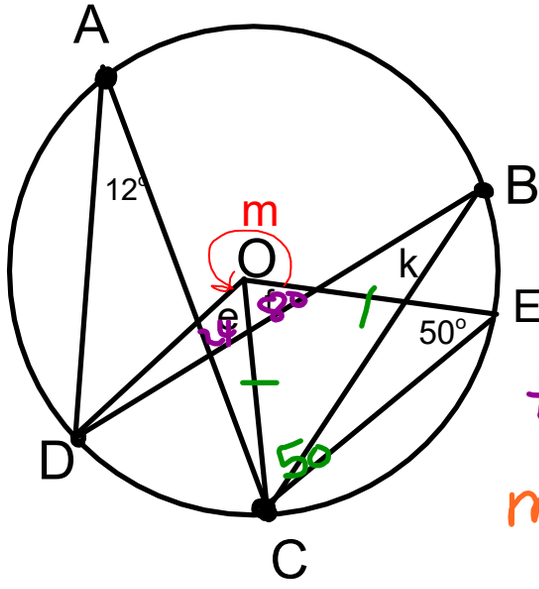
$c^2 = a^2 + b^2$

$a^2 = 13^2 + 6^2$

$a^2 = 205$

$a = 14.3$

Determine each unknown:



OC = OE (radii)

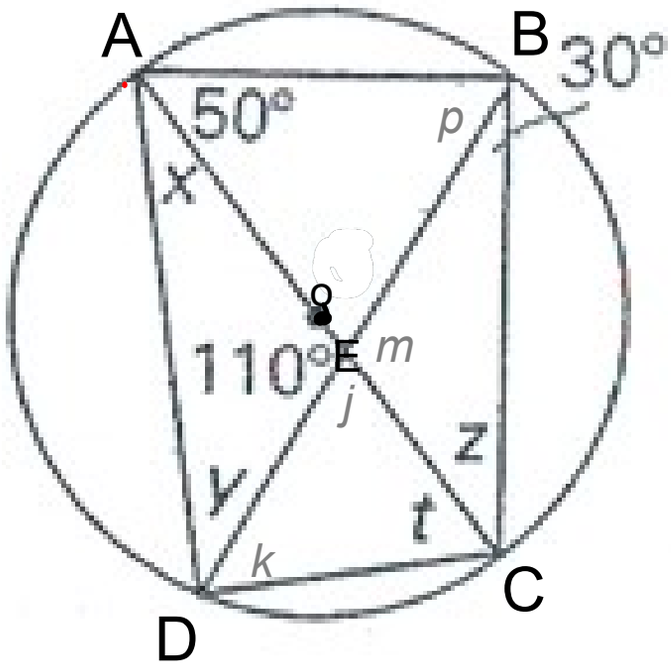
∠DAC = 12° (ins)

∠DBC = 12° (ins), $\overset{\frown}{DC}$

∠DOC = 24° (ins/cent, $\overset{\frown}{DC}$)

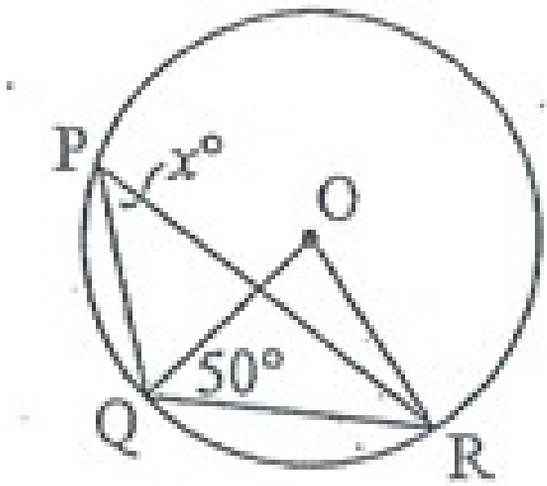
f = ∠COE = 80° (ltt)

m = ∠DOE = 256° (cy At)


A
B
30°
50°
p
x
E
110°
m
j
z
y
t
k
C
D

Find the unknown angles. State reasons.

3.



$\angle ORQ = 50°$ (ITT)

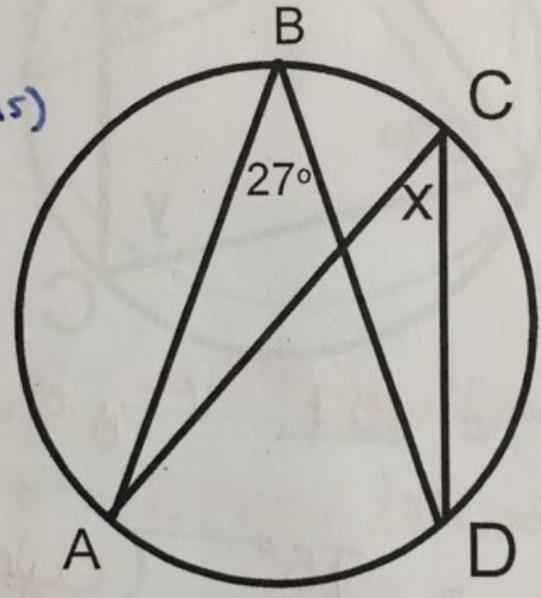
$\angle QOR = 80°$ (ins/cent; $\overset{\frown}{QR}$)

$x \to \angle QPR = 40°$ (ins< , Qr)

Angle Properties	Tangent & Chord Properties	Circle Properties
(SATT) (ITT) (SAT) (CAT) (OAT) (CyAT) (EAT)	< ___ = 90° (Tang P) <___= <___= 90° (Chord P) ___ = ____(Chord P) ___ = ____=___(Radii)	< ___= __° (ins/cent >, $\overset{\frown}{\_\_}$) < ___= __° (ins >, $\overset{\frown}{\_\_}$) < ___= __° (ins >, diam) < ___= __° (CyQuad)

Homework Answers:

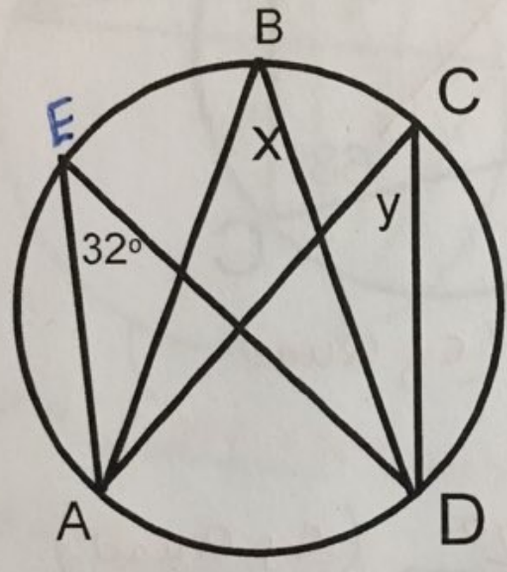
Calculate the unknow



$\angle ABD = 27°$ (ins)

$\angle X° \Rightarrow \angle ACD = 27°$ (ins>, $\widehat{AD}$)

/n angles:

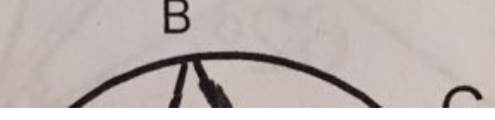


$\angle AED = 32°$ (ins)

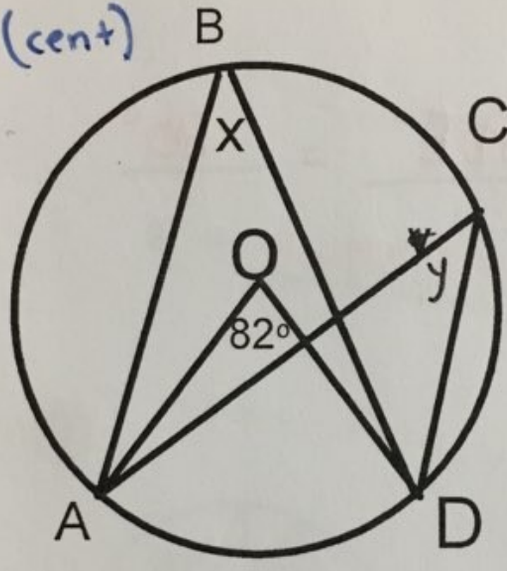
$\angle x° \Rightarrow \angle$ ABD $=$ 32° (ins> AD)

$\angle y° \Rightarrow \angle$ ACD $=$ 32° (ins> AD)

$\angle ABD = 34°$ (ins)



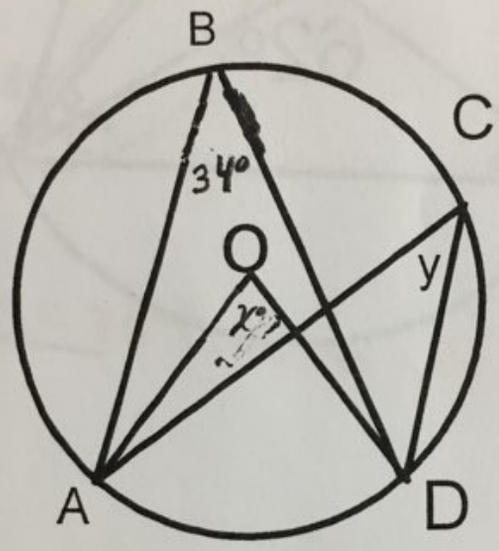
$\angle AOD = 82°$ (cent)



$\angle X° \Rightarrow \angle ABD = 41°$ (ins/cent, $\overset{\frown}{AD}$)

$\angle y° \Rightarrow \angle ACD = 41°$ (ins/cent $\overset{\frown}{AD}$)

$\angle ABD = 34°$ (ins)



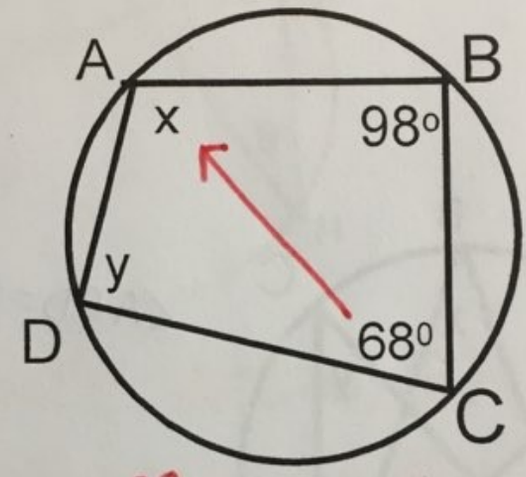
$\angle x° \Rightarrow \angle$ AOD $=$ 68° (ins/cent $\angle$s $\overset{\frown}{AD}$)

$\angle y° \Rightarrow \angle$ ACD $=$ 34° (ins $\angle$ $\overset{\frown}{AD}$)

1

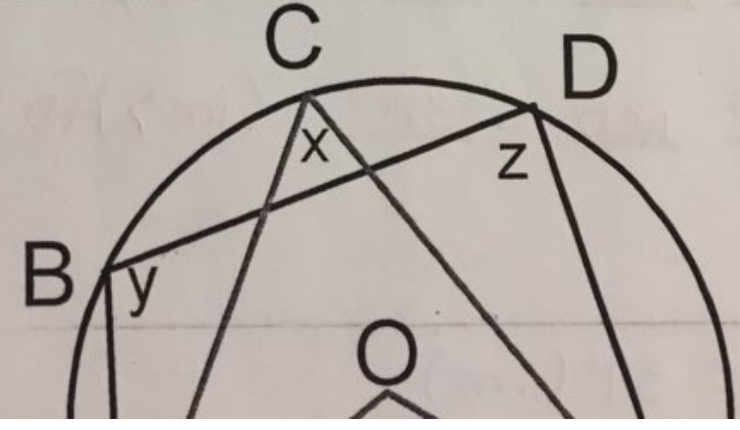
May 19 Period 4.notebook

Calculate the unknown a



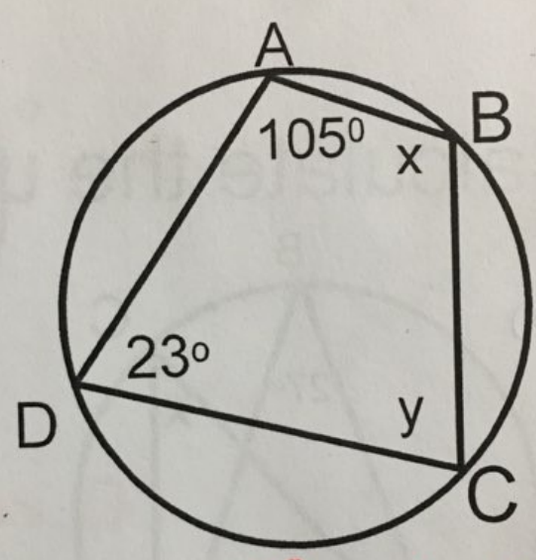
$x° \Rightarrow \angle BAD = 112°$ (cy Quad)

$y° \Rightarrow \angle ADC = 82°$ (cy quad)



May 19, 2016

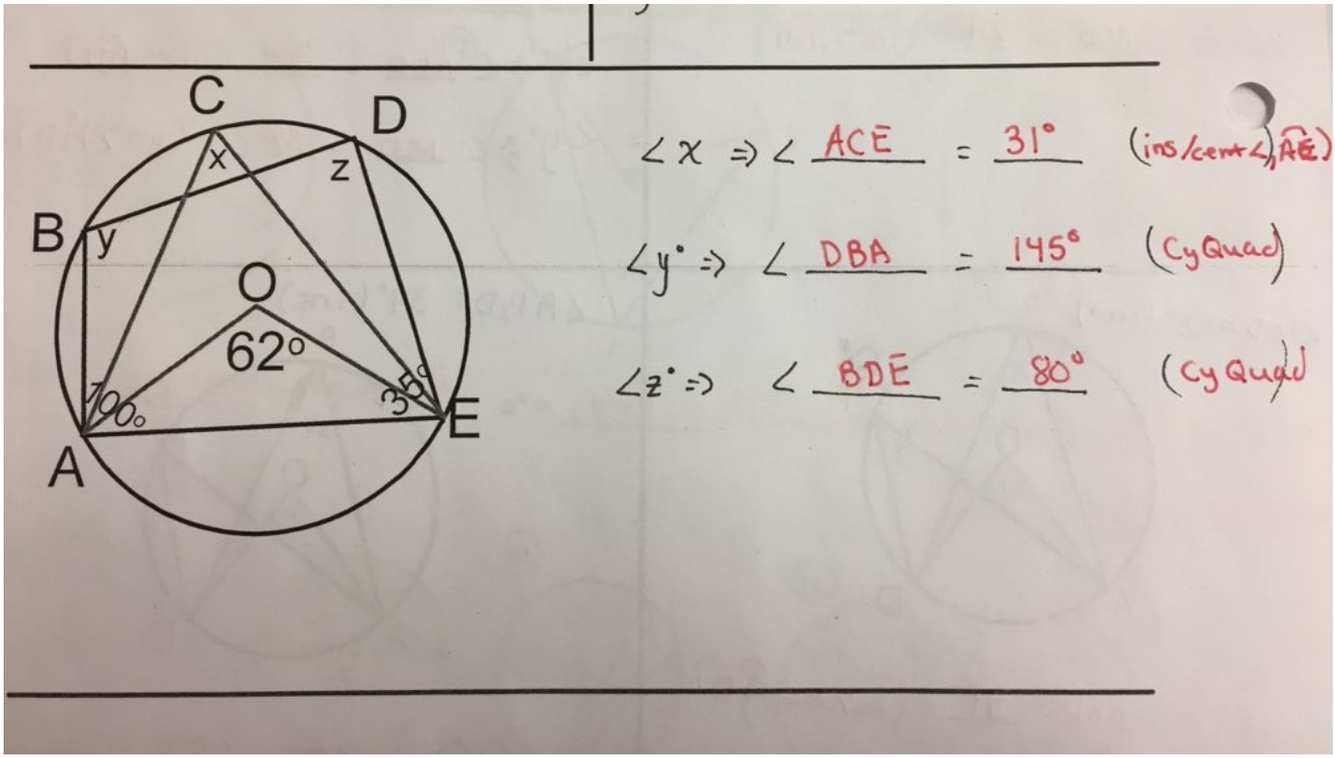
angles:



$x° \Rightarrow \angle$ ABC $=$ 157° (Cy Quad)

$y° \Rightarrow \angle$ BCD $=$ 75° (Cy Quad)

$\angle x \Rightarrow \angle$ ACE $=$ 31° (ins/cent



$\angle x \Rightarrow \angle$ ACE $= 31°$ (ins/cent $\angle$, $\overset{\frown}{AE}$)

$\angle y° \Rightarrow \angle$ DBA $= 145°$ (CyQuad)

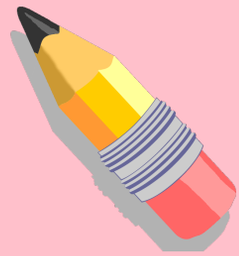
$\angle z° \Rightarrow \angle$ BDE $= 80°$ (CyQuad)

Homework:

p.410 - 412

3
4
5
6
9
11

Copy the questions out into your notebook for Tuesday



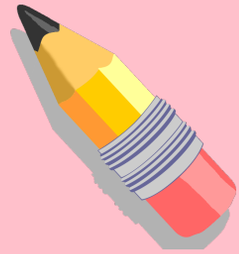
Homework:

p.418 - 419

Questions: 1,2,5,6,7,9,10

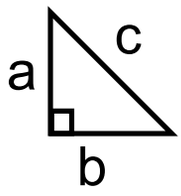
p.420

Questions: 1,2,3,



Chapter 8: Notes

Pythagorean theorem



Hyp = ?

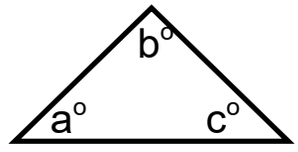
$c^2 = a^2 + b^2$

Leg = ?

$a^2 = c^2 - b^2$

Angle Sum of Triangle Theorem

(SATT)



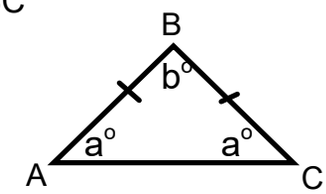
$a^o + b^o + c^o = 180^o$

Isosceles Triangle Theorem (ITT)

Two sides are equal : AB = BC

Base angles are equal:

< A = <C



If a^o = ?

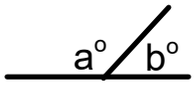
$a^o = \frac{180 - b}{2}$

If b^o = ?

$b^o = 180 - a^o - a^o$

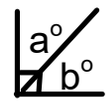
Angle Properties

Supplementary Angle Theorem (SAT)



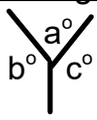
$a^o + b^o = 180^o$

Complimentary Angle Theorem (CAT)



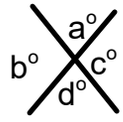
$a^o + b^o = 90^o$

Cyclic Angle Theorem (CyAT)



$a^o + b^o + c^o = 360^o$

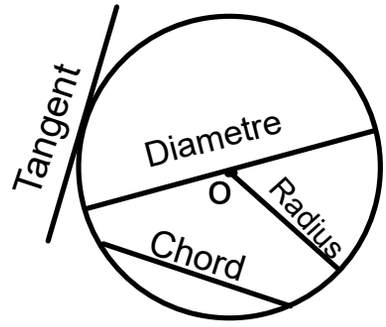
Opposite Angle Theorem (OAT)



$a^o = d^o$

$b^o = c^o$

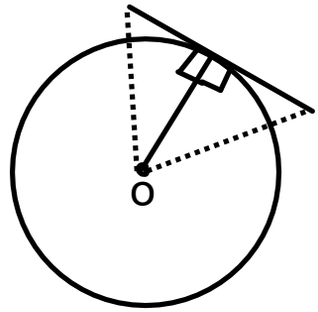
Information about circles



Tangent Property

< ___ = 90° (Tang P)

- a radius hits a tangent at 90°



To solve unknown sides :

Pythagorean Theorem

To solve unknown angles :

SATT

Chord Property

If chord lengths are indicted

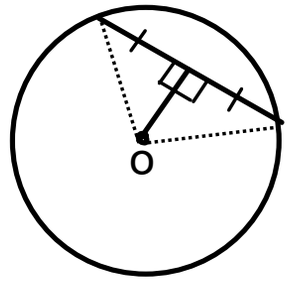
<___= <___= 90° (Chord P)

If 90° is indicated

___ = _____(Chord P)

a line coming from the centre of the circle

- hits chord at a 90° angle
- cuts the chord into two equal pieces



To solve unknown sides :

Pythagorean Theorem

To solve unknown angles :

SATT

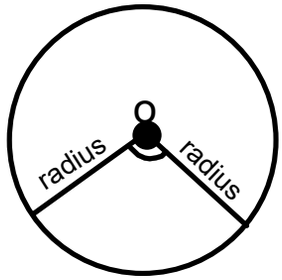
ITT

Identify radii

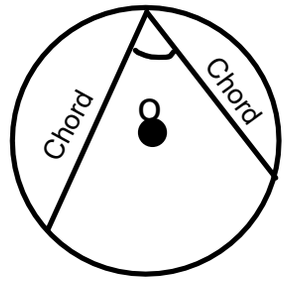
___ = _____=___(Radii)

Circle Properties

Central Angle

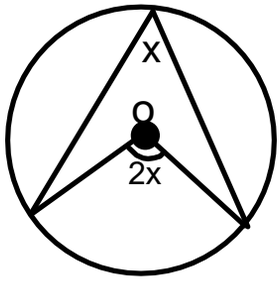


Inscribed Angle



Property # 1: Central & Inscribed Angles

< ___= __° (ins/cent >, ⌒)

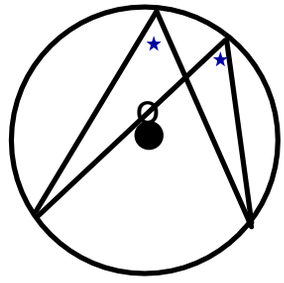


- The central angle is double the inscribed angle

- The inscribed angle is half the central angle

Property # 2: Inscribed Angles

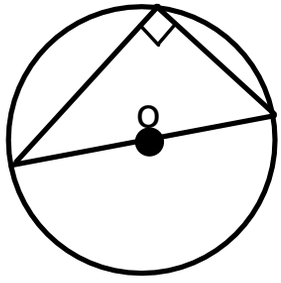
< ___= __° (ins >, ⌒)



- Inscribed angles coming from the same arc are equal

Property # 3: Inscribed from Diameter

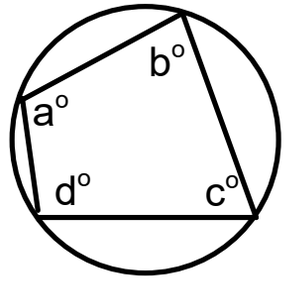
< ___= __° (ins >, diam)



- Inscribed angles coming from the diametre are 90°

Property # 4: Cyclic Quadrilateral

< ___= __° (CyQuad)



- Opposite angles in a cyclic quad must add up to 180°

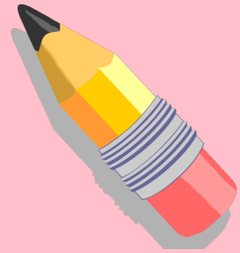
$a^\circ + c^\circ = 180^\circ$

$b^\circ + d^\circ = 180^\circ$

(SATT) (ITT) (SAT) (CAT) (OAT) (CyAT) (EAT)	< ___ = 90° (Tang P) <___= <___= 90° (Chord P) ___ = ____(Chord P) ___ = ____=___(Radii)	< ___= __° (ins/cent >, $\overset{\frown}{\_\_}$) < ___= __° (ins >, $\overset{\frown}{\_\_}$) < ___= __° (ins >, diam) < ___= __° (CyQuad)

Homework:

Worksheet- Angles in a circle Worksheet - Angles in a Circle.doc



4a, 5a, 6, 7, 8, 9, 10

SKETCH CIRCLES

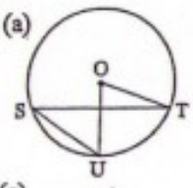
Answers

6.3 Exercise

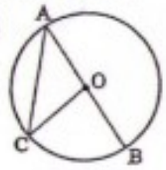
A **Review the relationships with circles.**

1 For each of the diagrams, name the inscribed angles and the central angles.

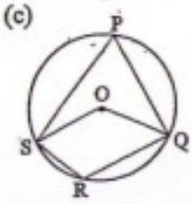
(a)



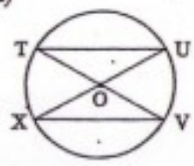
(b)



(c)

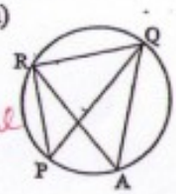


(d)



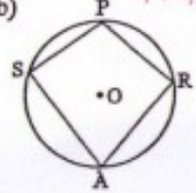
2 How are $\angle P$ and $\angle A$ related in each diagram?

(a)



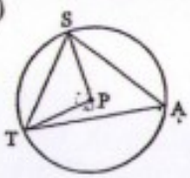
opposite

(b)



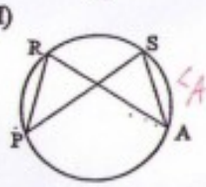
$\angle P + \angle A = 180°$

(c)



$\angle P = 2\angle A$

(d)

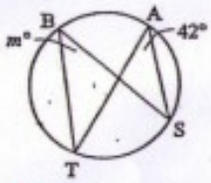


$\angle A = \angle P$

3 Refer to each diagram.

(a) Why is $\angle A = \angle B$? What is the value of m?

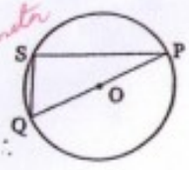
property II



(b) What type of line segment is PQ? What is the measure of $\angle S$?

diameter

90°



4 An arc subtends each angle at the circumference. What is the measure of the corresponding central angle?

(a) 20° (b) 40° (c) 80°

Central angle: 40° 80° 160°

5 An arc subtends each angle at the centre of the circle. What is the measure of the corresponding inscribed angle at the circumference?

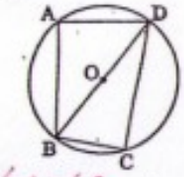
(a) 80° (b) 50° (c) 110°

inscribed angle 40° 25° 55°

B **To find the missing measures in some problems, you need to use other properties of geometric figures.**

6 For each diagram, which angles are equal?

(a)



$\angle A = \angle C$

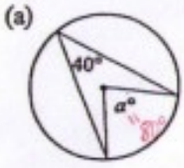
(b)

$\angle K = \angle R = \angle S$

7 Which property of angles in a circle is used to find each measure? Find each missing measure. Give reasons for your answers.

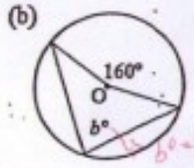
property III

(a)



$a° = 80°$

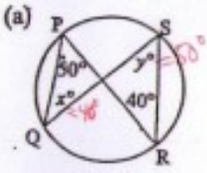
(b)



$b° = 80°$

8 Which property of angles in a circle is used to find each measure? Find each missing measure. Give reasons for your answers.

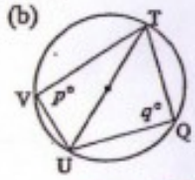
(a)



$x° = 40°$ $y° = 50°$

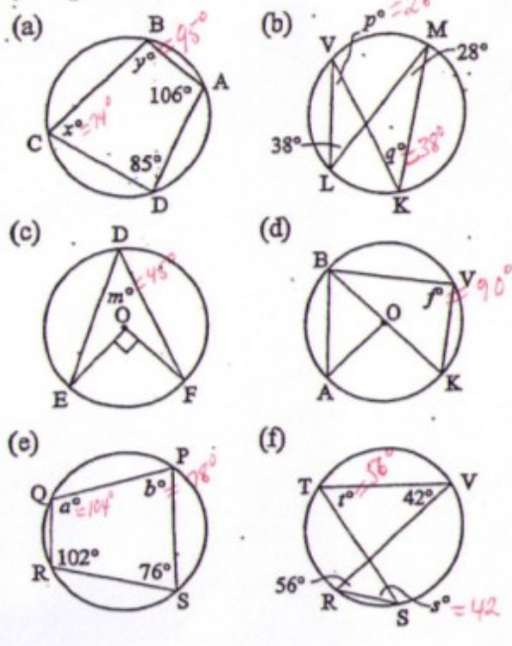
property II

(b)



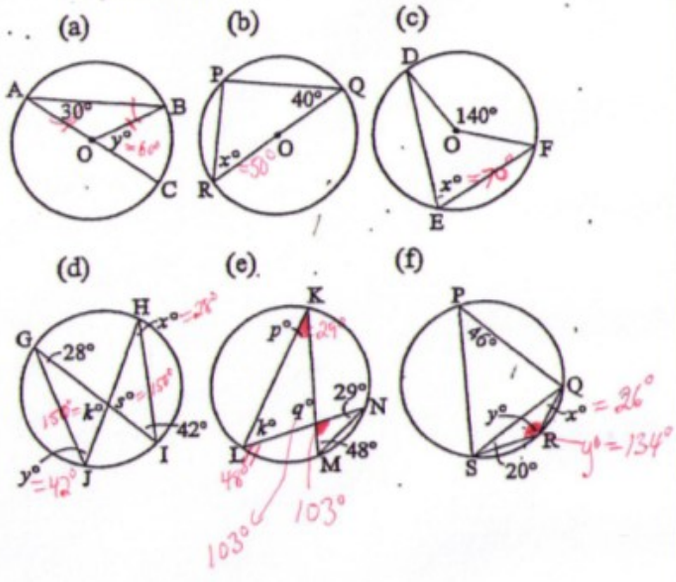
property I

9 Find the missing measures. Do not use your protractor.



C To solve some problems, you may need to use more than one geometric fact.

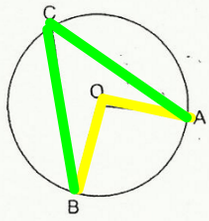
10 Find the missing measures. Give reasons for your answers.



Angle Practice Geo 4 Apps 11.2 Name: _____

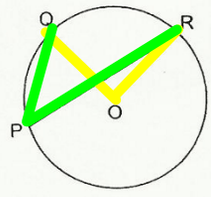
2. In each circle, name a central angle and an inscribed angle subtended by the same arc. Shade the arc.

a)



Central angle: ∠ BOA
Inscribed angle: ∠ BCA

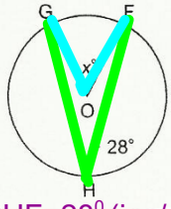
b)



Central angle: ∠ QOR
Inscribed angle: ∠ QPR

3. Determine each indicated measure.

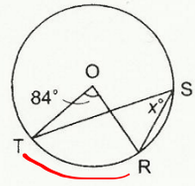
a)



<GHF=28⁰ (ins/cent <, GF)

< GOF=56° (ins/cent<, GF)

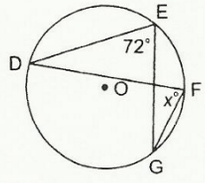
b)



<TOR=84⁰ (ins/cent<, TR)

<TsR=42⁰ (ins/cent<, TR)

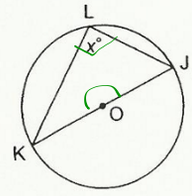
c)



<DEG=72⁰ (inc<, DG)

<DFG=72⁰ (inc<, DG)

d)

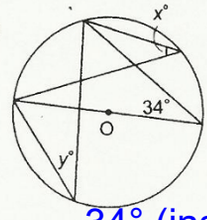


<KOJ=180⁰ (cent<, diam)

<KLJ=90⁰ (inc<, diam)

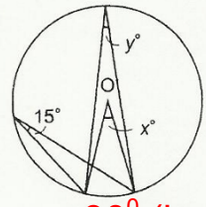
4. Determine each value of $x°$ and $y°$.

a)



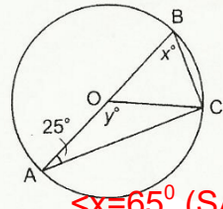
$x°$ = 34° (ins <)
$y°$ = 34° (ins <)

b)



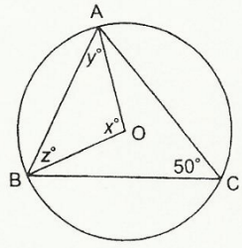
<x=30⁰ (ins/cent<)
<y=15⁰ (inc<)

5. Find the value of $x°$ and $y°$.



<x=65⁰ (SATT)
<y=130⁰ (ITT)

6. Find the value of $x°$, $y°$, and $z°$.



<x=100⁰ (ins/cent <, AB)

<y=40⁰ (ITT)

<z=40⁰ (ITT)