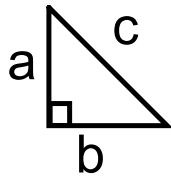


Chapter 8: Notes

Pythagorean theorem

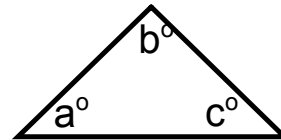


Hyp = ?
 $c^2 = a^2 + b^2$

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

Angle Sum of Triangle Theorem

(SATT)

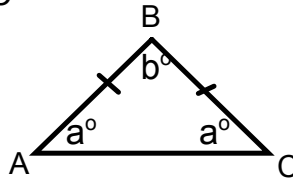


$$a^\circ + b^\circ + c^\circ = 180^\circ$$

Isosceles Triangle Theorem **(ITT)**

Two sides are equal : $AB = BC$

Base angles are equal:
 $\angle A = \angle C$



If $a^\circ = ?$

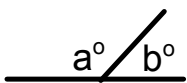
$$a^\circ = \frac{180 - b}{2}$$

If $b^\circ = ?$

$$b^\circ = 180 - a^\circ - a^\circ$$

Angle Properties

Supplementary Angle Theorem **(SAT)**



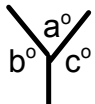
$$a^\circ + b^\circ = 180^\circ$$

Complimentary Angle Theorem **(CAT)**



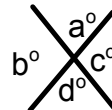
$$a^\circ + b^\circ = 90^\circ$$

Cyclic Angle Theorem **(CyAT)**



$$a^\circ + b^\circ + c^\circ = 360^\circ$$

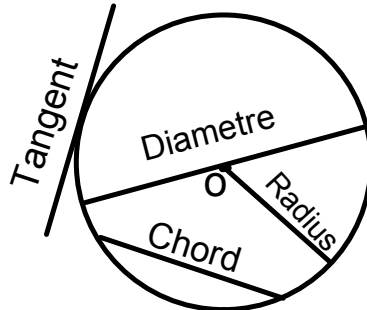
Opposite Angle Theorem **(OAT)**



$$a^\circ = d^\circ$$

$$b^\circ = c^\circ$$

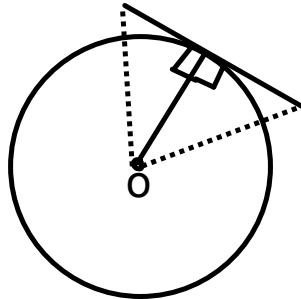
Information about circles



Tangent Property

$$\angle \text{---} = 90^\circ \text{ (Tang P)}$$

- a radius hits a tangent at 90°



To solve unknown sides :
Pythagorean Theorem

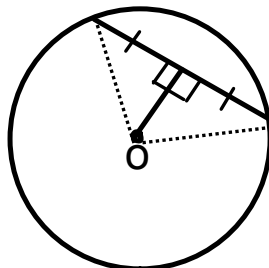
To solve unknown angles :
SATT

Chord Property

$$\text{If chord lengths are indicated} \\ \angle \text{---} = \angle \text{---} = 90^\circ \text{ (Chord P)}$$

a line coming from the centre of the circle

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



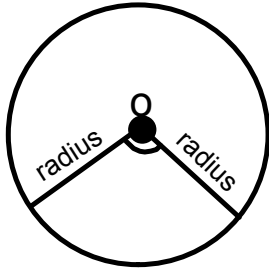
$$\text{If } 90^\circ \text{ is indicated} \\ \text{---} = \text{---} \text{ (Chord P)}$$

To solve unknown sides :
Pythagorean Theorem

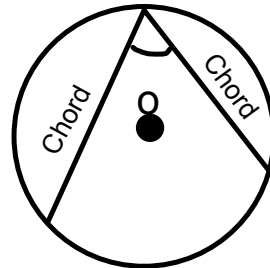
To solve unknown angles :
SATT
ITT

Circle Properties

Central Angle

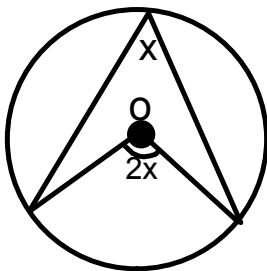


Inscribed Angle



Property # 1: Central & Inscribed Angles

$$\angle \text{___} = \text{___}^\circ \text{ (ins/cent >, \frown)}$$

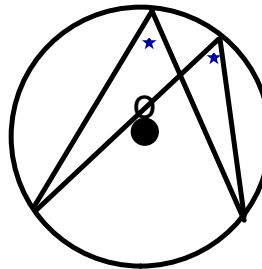


- The central angle is double the inscribed angle

- The inscribed angle is half the central angle

Property # 2: Inscribed Angles

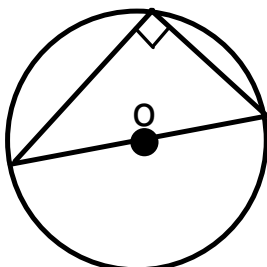
$$\angle \text{___} = \text{___}^\circ \text{ (ins >, \frown)}$$



- Inscribed angles coming from the same arc are equal

Property # 3: Inscribed from Diameter

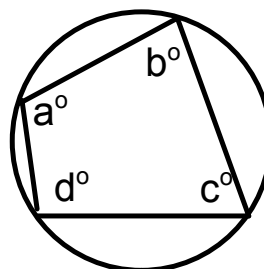
$$\angle \text{___} = \text{___}^\circ \text{ (ins >, diam)}$$



- Inscribed angles coming from the diameter are 90°

Property # 4: Cyclic Quadrilateral

$$\angle \text{___} = \text{___}^\circ \text{ (CyQuad)}$$



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

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

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