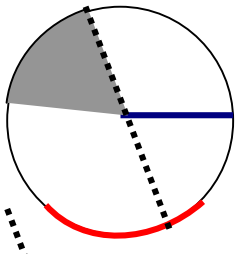
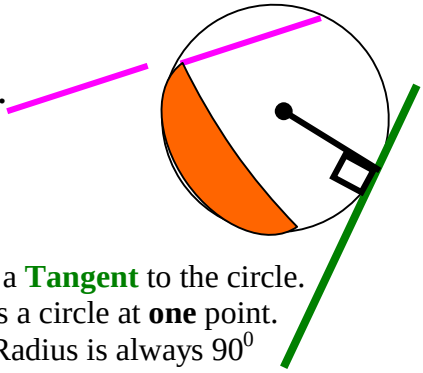
Circle Theorems

A circle has many parts



This is a **Sector.**

This is a Chord.



This is the **Radius.**

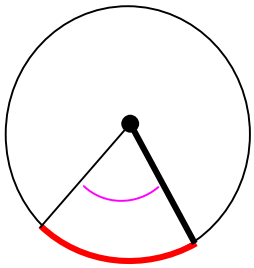
This is the **Diameter.**

This line is a **Tangent** to the circle.
A Tangent touches a circle at **one** point.
The angle between the Tangent and the Radius is always 90^0

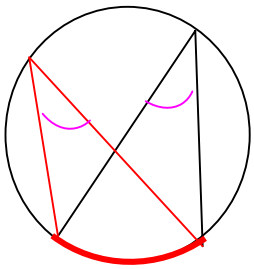
This is known as a **Segment.** **Like an orange segment.**

This is an Arc. 

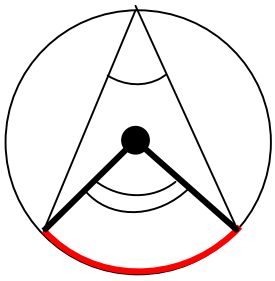
An arc will **subtend** an angle at the **centre** of a circle.



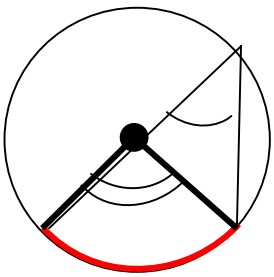
The arc may also subtend angles at different points on the circumference of the circle.



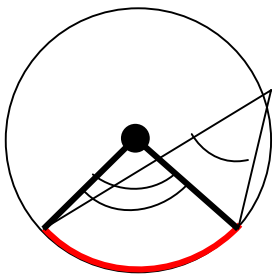
RULE 1 The angle subtended by an arc at the centre of a circle is equal to **twice** the angle subtended by the same arc at the circumference.



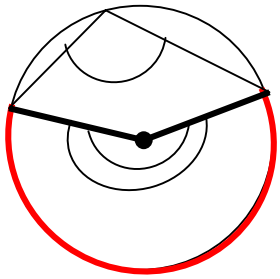
Like a Tent



Blown sideways

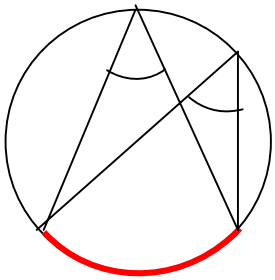


Blown more sideways

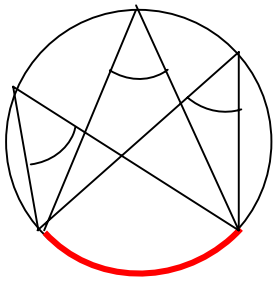


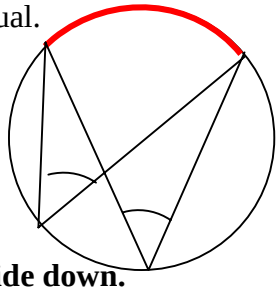
Blown inside out.

RULE 2 The angles subtended by an arc on the circumference of the circle are equal.



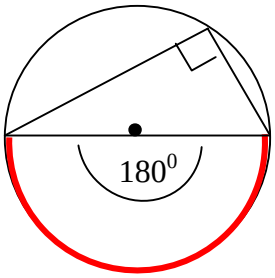
Like mountain peaks.



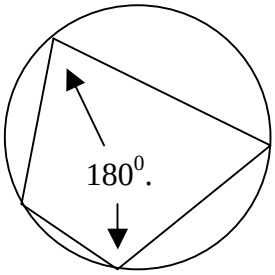


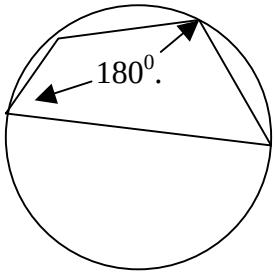
Even upside down.

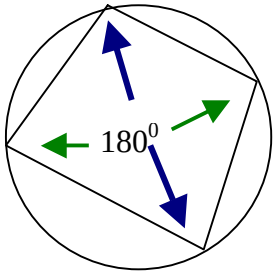
RULE 3 The angle in a semicircle is always 90^0. Of course it is: It is half the angle at the centre which is 180^0.



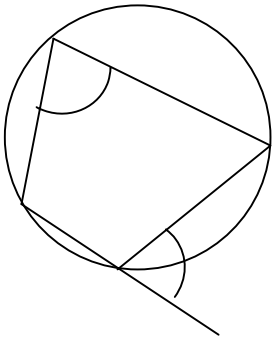
RULE 4 **Concerns Cyclic Quadrilaterals.** Quadrilateral which have all their vertices on the Circumference of a circle.





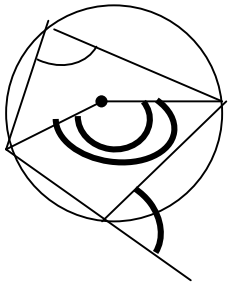


The opposite angles in a cyclic quadrilateral are **supplementary.** They add up to 180^0.

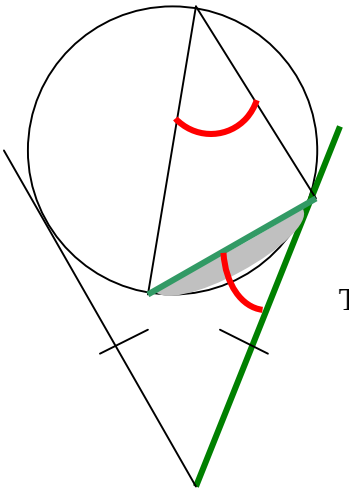


Continuing any one line of the quadrilateral produces an **exterior angle.**

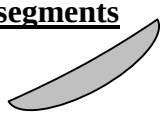
RULE 5 **In a cyclic quadrilateral,** The **exterior angle** is equal to the **interior opposite angle.**



The exterior angle is also **half** the angle at the centre. Try and figure out why!

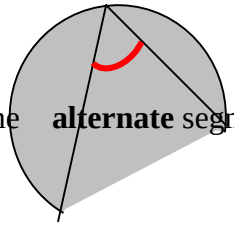


Tangents, chords and segments

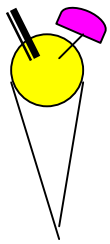
The **chord** forms a segment  with the circle

and an **angle** with the **tangent.**

This angle is equal to the **angle in** the **alternate** segment.



Two tangents from a point outside a circle **are equal** in length. Like an ice cream cone!



Yum Yum!