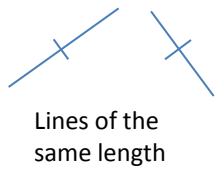
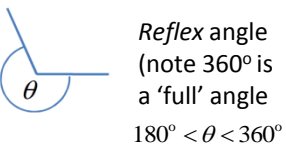
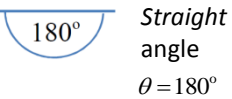
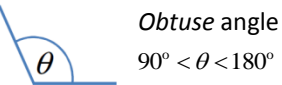
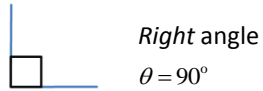
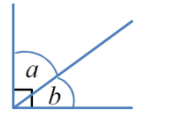
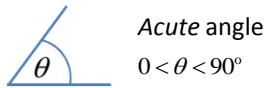


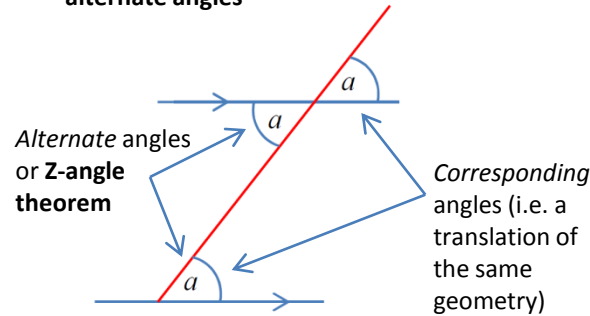
## Geometry : Lines and angles



### Definitions involving angles



### Corresponding and alternate angles

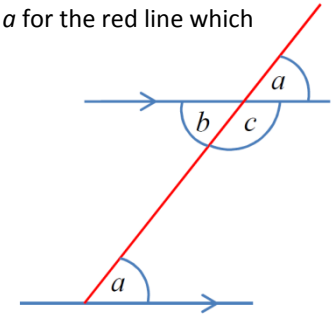


To *prove* the Z-angle theorem, notice angle  $c$  is supplementary to angle  $b$  for the upper horizontal blue line, and also to angle  $a$  for the red line which crosses it

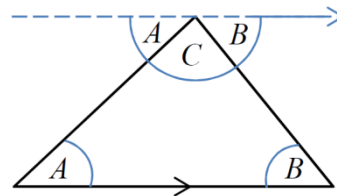
$$b + c = 180^\circ$$

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

$$\therefore a = b$$



### Internal angles of any triangle sum to $180^\circ$



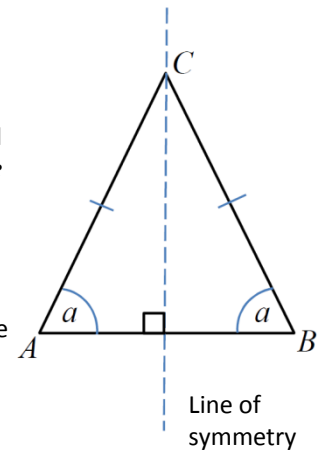
As indicated, a proof of this fundamental result proceeds by drawing a line parallel to the triangle base through the top vertex of the triangle. Using **the Z-angle theorem** for angles A and B

$$A + B + C = 180^\circ$$

### Isosceles triangle

i.e. sides AC and CB are *the same length*

If *all sides are the same length* then the triangle is **equilateral**



## Euclid

- Greek mathematician. The "Father of Geometry"
- Active in Alexandria during reign of Ptolemy I (323-283 BC)
- His *Elements* is one of the most influential works in the history of mathematics, serving as the main textbook for teaching mathematics (especially geometry) from the time of its publication until the late 19<sup>th</sup> or early 20<sup>th</sup> century.

