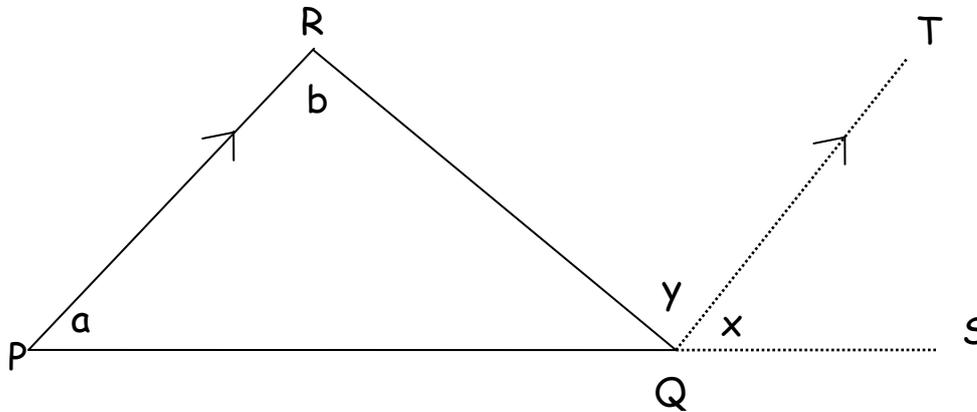


Proof 1 - An exterior angle of a triangle is equal to the sum of the interior angles at the other two vertices.



This diagram shows a triangle PQR.
Extend the side PQ to S.
At Q draw a line QT parallel to PR.

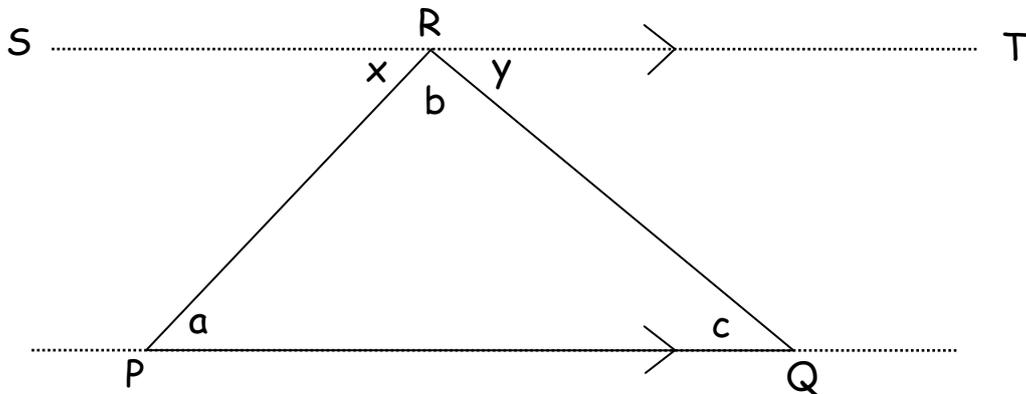
Then angle x = angle a (corresponding angles)
and angle y = angle b (alternate angles)

So $x + y = a + b$

$x + y$ is the exterior angle of the triangle and $a + b$ is the sum of the interior angles at the two opposite vertices and so the statement is true.

QED

Proof 2 - Angles in a triangle add up to 180° .



This diagram shows a triangle PQR.

Add a line ST, parallel to the base of the triangle and touching the triangle at R.

Then angle x = angle a (alternate angles)

and angle y = angle c (alternate angles)

So $x + b + y = a + b + c$

But $x + b + y = 180^\circ$ (angles on a **straight line**)

So $a + b + c = 180^\circ$ which proves that the statement is true.

QED