

Two lines at right angles to each other are perpendicular, for example a crossroads.

If perpendicular lines have gradients  $m_1$  and  $m_2$ , then  $m_1$  times  $m_2$  always equals negative one.

If the gradient of one line is known, then the gradient of the line perpendicular to it is found by using the negative reciprocal or inverse value.

If  $m_1$  equals negative three, then  $m_2$  will equal one over three as when multiplied together it gives negative one.

Given that T is the point one, negative two and S is the point negative four, five, find the gradient of the line perpendicular to ST.

Calculate the gradient of ST.

The gradient equals  $y_2$  subtract  $y_1$  divided by  $x_2$  subtract  $x_1$ , which equals five subtract negative two over negative four subtract one, which equals negative seven over five.

The gradient of ST is negative seven over five so the perpendicular gradient is the inverse, five over seven.

Remember, the perpendicular rule cannot be used if the lines is parallel to the x or y axis and for perpendicular gradients  $m_1$  times  $m_2$  equals negative one.