

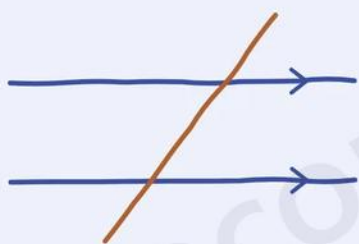
one transversal, eight angles, and the three pairs that carry every result



The setup, and the names of the angle pairs

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- two lines in a plane are **parallel** when they never meet however far they are produced
- a **transversal** is a line cutting two or more lines at distinct points, and it creates **eight angles** in all
- **corresponding angles** sit in matching positions at the two crossings, one above and one below, both on the same side
- **alternate angles** sit on **opposite sides** of the transversal, the interior pair lying between the two lines
- **co-interior angles**, also called allied, lie between the two lines and on the **same side** of the transversal
- these names apply **whether or not the lines are parallel**. It is only the equalities below that need parallelism



two parallel lines cut by a transversal, with the chevrons marking the parallel pair: the eight angles formed split into four at the upper crossing and four at the lower, and each angle at one crossing has a partner at the other

The three properties, when the lines are parallel

Corresponding

equal. The pair in matching positions at the two crossings have the same measure. This is usually taken as the axiom the other two are proved from

Alternate

equal. The pair on opposite sides of the transversal, whether both interior or both exterior, have the same measure

Co-interior

supplementary, adding to 180° . This is the one pair that is NOT equal, and treating it as equal is the classic error

The converses

each runs backwards too: if a pair of corresponding angles is equal, or alternate angles are equal, or co-interior angles add to 180° , then the lines are parallel

two of the three pairs are equal and one is supplementary, so the only thing to remember is which one is the odd one out: the pair on the same side, between the lines