

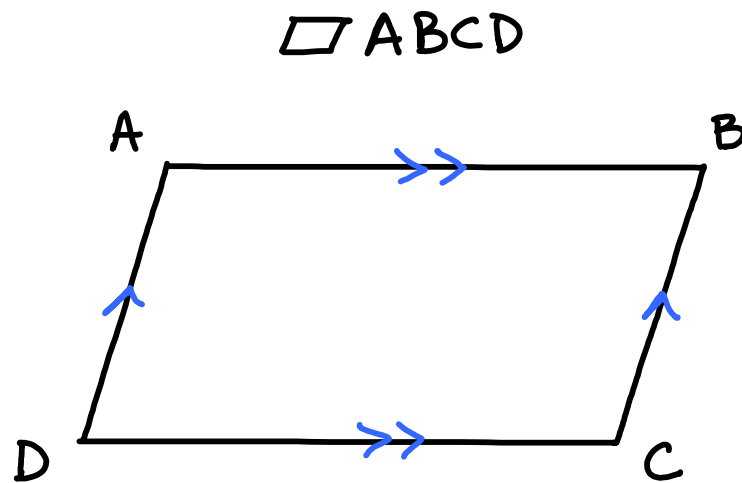
Quadrilaterals



Chapter Review



Parallelograms



$$AB \parallel DC$$

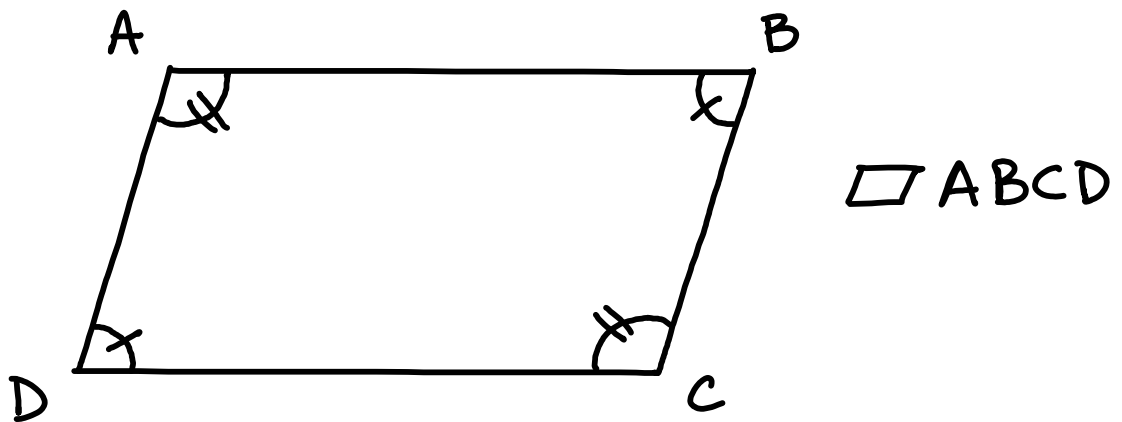
$$AD \parallel BC$$

a parallelogram is a quadrilateral with both pairs of opposite sides parallel.

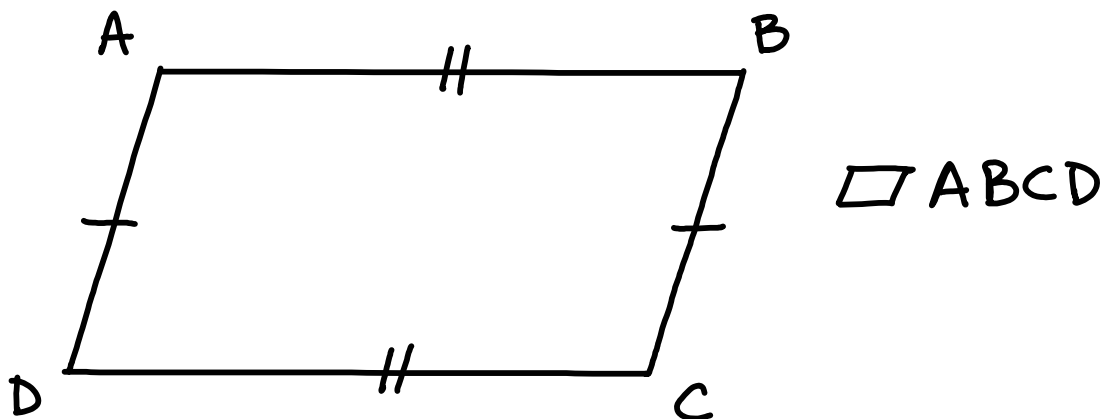


Parallelogram Theorems

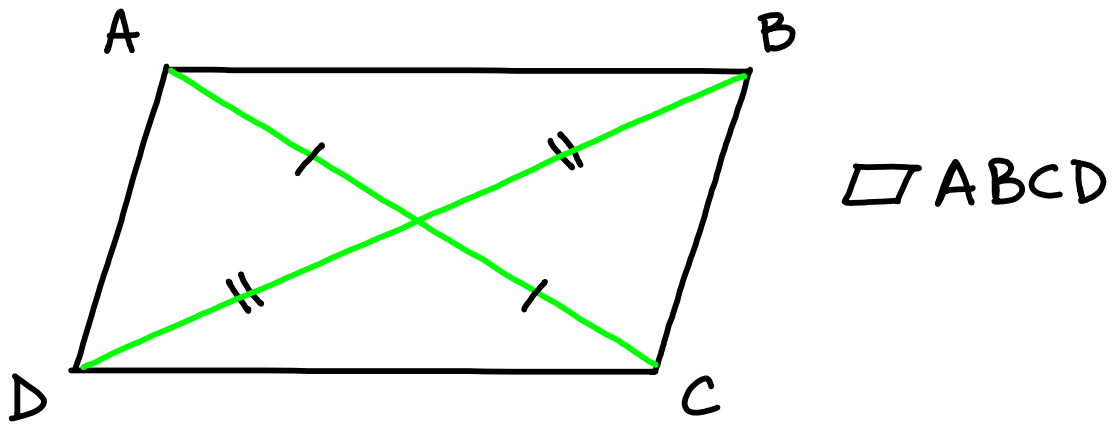
opposite sides of a parallelogram are congruent



opposite angles of a parallelogram are congruent



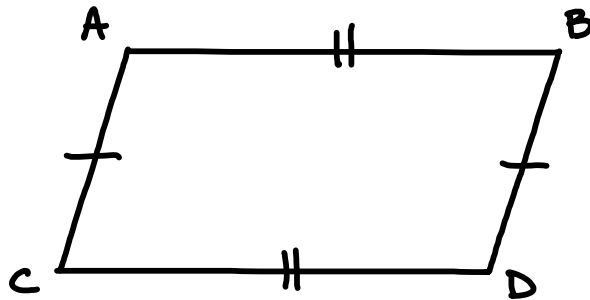
diagonals of a parallelogram bisect each other



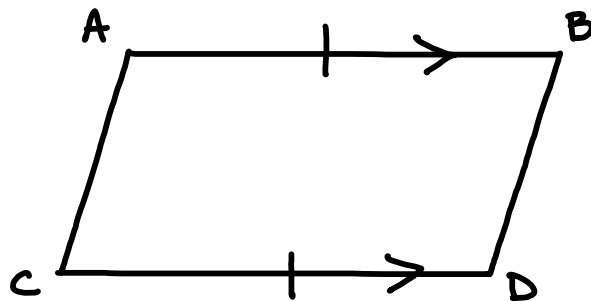


Proving Quadrilaterals are Parallelograms

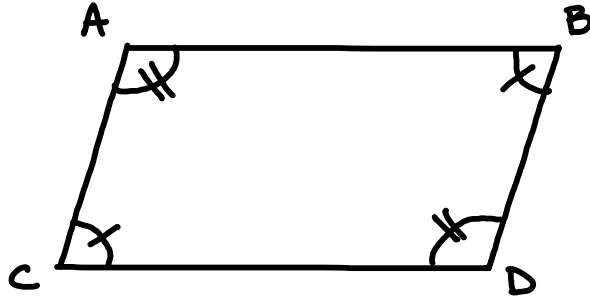
if both pairs of opposite sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram.



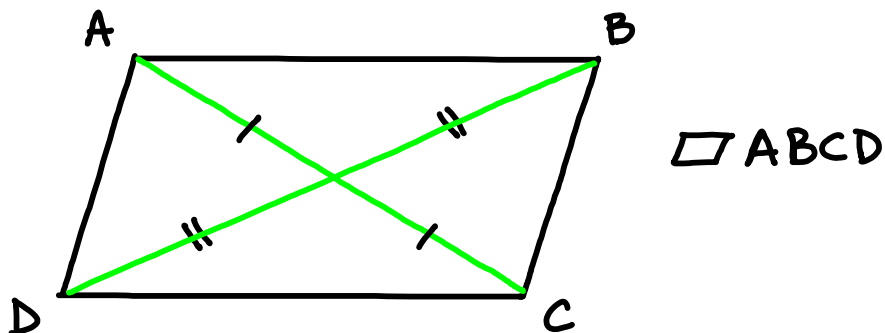
if one pair of opposite sides of a quadrilateral are both congruent and parallel, then the quadrilateral is a parallelogram.



if both pairs of opposite angles of a quadrilateral are congruent, then the quadrilateral is a parallelogram.



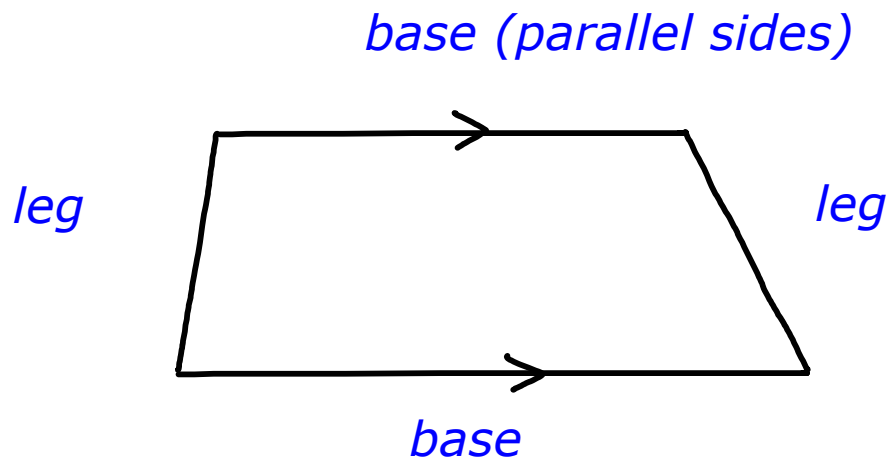
if the diagonals of a quadrilateral bisect each other, then the quadrilateral is a parallelogram.



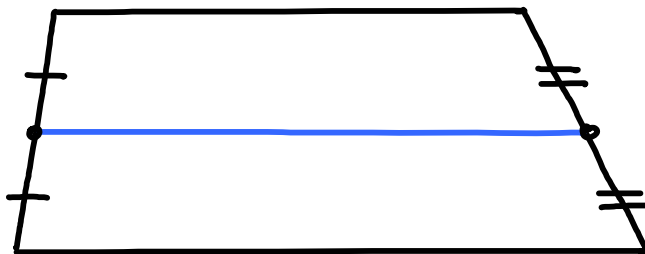


Trapezoids

A **trapezoid** is a quadrilateral with exactly one pair of parallel sides.



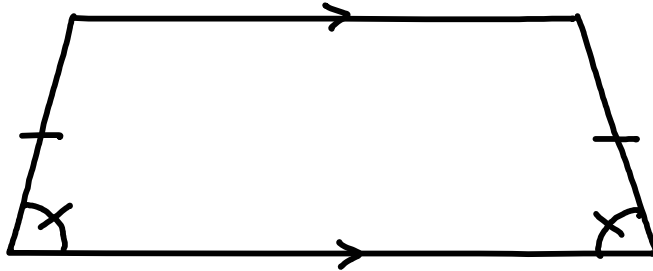
The **median** of a trapezoid is the segment that joins the midpoints of the legs



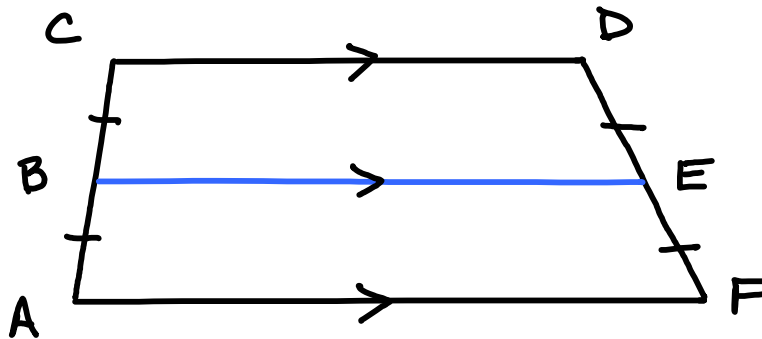


Trapezoid Theorems

Base angles of an isosceles trapezoid are congruent



The median of a trapezoid is parallel to the bases and has a length equal to the average of the base lengths



$$BE \parallel CD \parallel AF$$

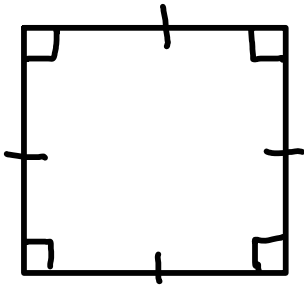
$$BE = \frac{1}{2}(CD + AF)$$



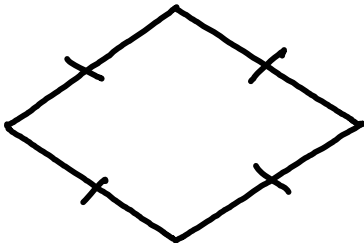
Special Quadrilaterals



A **rectangle** is a quadrilateral with four right angles



A **square** is a quadrilateral with four right angles and four congruent sides

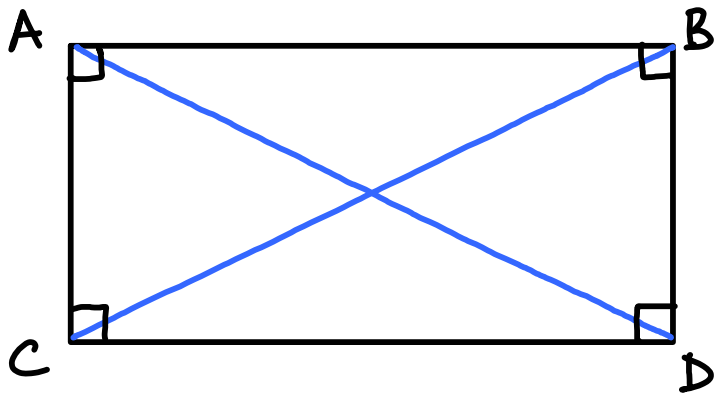


A **rhombus** is a quadrilateral with four congruent sides



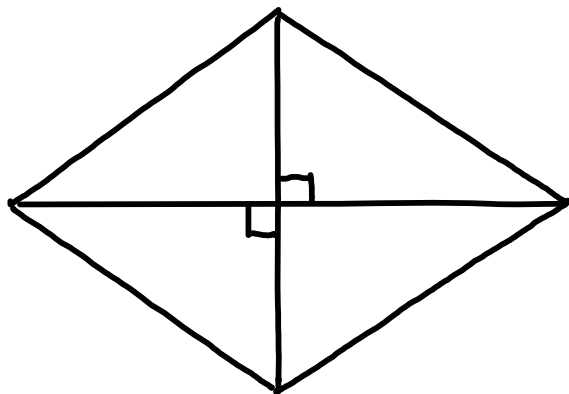
Theorems about Rectangles, Rhombuses and Squares

The diagonals of a rectangle are congruent

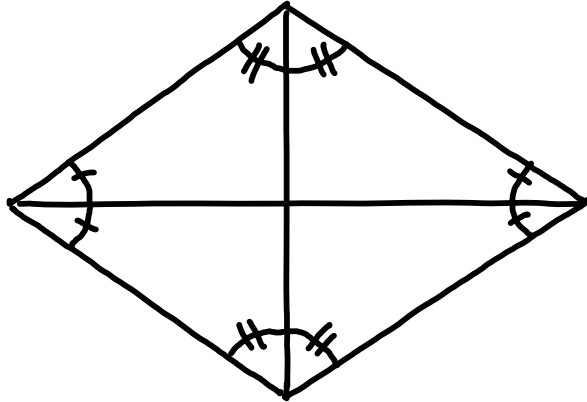


$$AD \cong BC$$

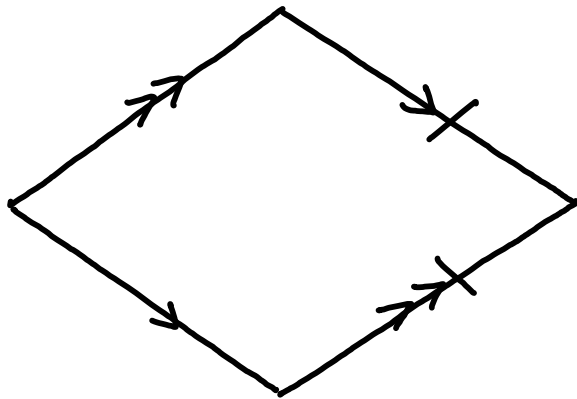
The diagonals of a rhombus are perpendicular



Each diagonal of a rhombus bisects two angles of the rhombus



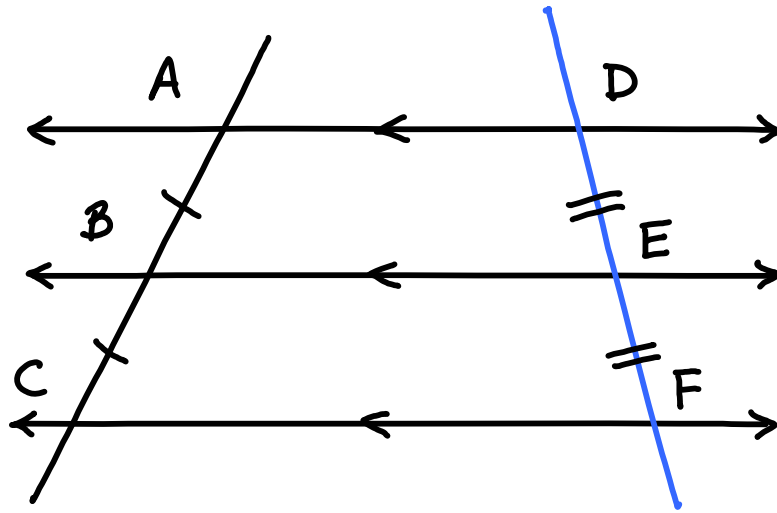
If two consecutive sides of a parallelogram are congruent, then the parallelogram is a rhombus





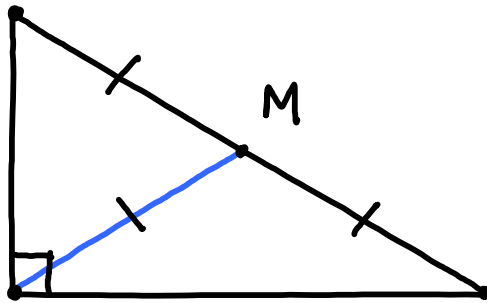
Quadrilaterals, Triangles and Midpoints

if three parallel lines cut off congruent segments on one transversal, then they cut off congruent segments on every transversal

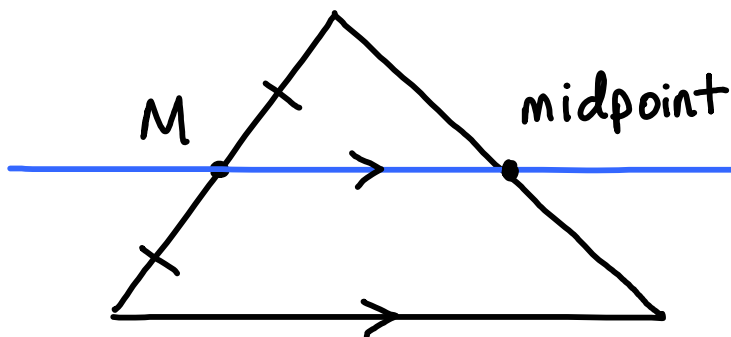


theorems involving the midpoint of one side of a triangle

the midpoint of the hypotenuse of a right triangle is equidistant from the three vertices



A line that contains the midpoint of one side of a triangle and is parallel to another side passes through the midpoint of the third side



The segment that joins the midpoints of two sides of a triangle is parallel to the third side- and is half as long as the third side

$$MP \parallel AC$$

$$MP = \frac{1}{2} AC$$

