

Definition 33

polygon A polygon is the union of n segments in a plane, intersecting at and only at their endpoints, such that exactly two segments contain each endpoint and no two consecutive segments are on the same line.

We are going to assume that any polygon is also convex unless stated otherwise.

Definition 34

Regular A polygon is regular if all sides and all interior angles are congruent.

Definition 35 A diagonal of a polygon is the line segment joining two non-consecutive vertices.

Theorem 58 The sum of the measures of the interior angles of an n -gon is $(n - 2)180$.

Theorem 59 The sum of the exterior angles of a polygon one at each vertex is 360.

Definition 36

parallelogram is a quadrilateral in which both pairs of opposite sides are parallel.

A rhombus is a parallelogram with a pair of congruent adjacent sides. A rectangle is a parallelogram with a right angle. A square is a rhombus that is a rectangle.

Theorem 60 A diagonal divides a parallelogram into two congruent triangles.

Theorem 61 If the opposite sides or the opposite angles of a quadrilateral are congruent, the quadrilateral is a parallelogram.

Theorem 62 Two parallel lines are everywhere equidistant.

Theorem 63 The diagonals of a quadrilateral bisect each other if and only if the quadrilateral is a parallelogram.

Theorem 64 Two consecutive angles of a parallelogram are supplementary

Definition 37

Trapezoid Is a quadrilateral with exactly one pair of parallel sides.

Homework 11

1. Two distinct lines parallel to a third line are parallel to each other.
2. If three or more parallel lines intercept congruent segments on one transversal, they intercept congruent segments on every transversal.
3. If a segment joins the midpoints of two sides of a triangle, then it is parallel to the third side and has half the length of the third side.