CHAPTER 5 – QUADRILATERALS

Objectives/Goals

5-1 – Properties of Parallelograms

Be able to state the definitions and properties of parallelograms

5-2 – Proving Quadrilaterals are Parallelograms

Be able to prove certain quadrilaterals are parallelograms

5-3 – Theorems Involving Parallel Lines

Be able to apply the theorem involving the midsegment of a triangle

5-4 – Special Parallelograms

Be able to classify different types of parallelograms, and identify their properties

5-5 – Trapezoids

Be able to apply the definition of a trapezoid and compare and contrast its properties to other special parallelograms

Essential Questions

1.) What are the specific properties of parallelograms?

2.) What are the properties of the midsegment of a triangle?

3.) What special property does the midpoint of the hypotenuse of a right triangle have?

4.) What are the properties of the median (midsegment) of a trapezoid?

5.) What are the relationships and classifications of various types of quadrilaterals?

Chapter 5 terms to know

Parallelogram Consecutive angles Midsegment of a triangle Rectangle Rhombus Square Trapezoid Bases of trap. Legs of trap. Base angles of trap Isosceles trap. Midsegment Median

CHAPTER 5

- Theorem 5-1 Opposite sides of a parallelogram are congruent.
- Theorem 5-2 Opposite angles of a parallelogram are congruent.
- Theorem 5-3 Diagonals of a parallelogram bisect each other.
- Theorem 5-4 If both pairs of opposite sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram.
- Theorem 5-5 If one pair of opposite sides of a quadrilateral are both congruent and parallel, then the quadrilateral is a parallelogram.
- Theorem 5-6 If both pairs of opposite angles of a quadrilateral are congruent, then the quadrilateral is a parallelogram.
- Theorem 5-7 If the diagonals of a quadrilateral bisect each other, then the quadrilateral is a parallelogram.
- Theorem 5-8 If two lines are parallel, then all points on one line are equidistant from the other line.
- Theorem 5-9 If three parallel lines cut off congruent segments on one transversal, then they cut off congruent segments on every transversal.
- Theorem 5-10 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.
- Theorem 5-11 The segment that joins the midpoints of two sides of a triangle (1) is parallel to the third side. (2) is half as long as the third side.
- Theorem 5-12 The diagonals of a rectangle are congruent.
- Theorem 5-13 The diagonals of a rhombus are perpendicular.
- Theorem 5-14 Each diagonal of a rhombus bisects two angles of the rhombus.
- Theorem 5-15 The midpoint of the hypotenuse of a right triangle is equidistant from the three vertices.
- Theorem 5-16 If an angle of a parallelogram is a right angle, then the parallelogram is a rectangle.
- Theorem 5-17 If two consecutive sides of a parallelogram are congruent, then the parallelogram is a rhombus.
- Theorem 5-18 Base angles of an isosceles trapezoid are congruent.
- Theorem 5-19 The median of a trapezoid
 - 1) is parallel to the bases.
 - 2) has a length equal to the average of the base lengths.