

Geometry

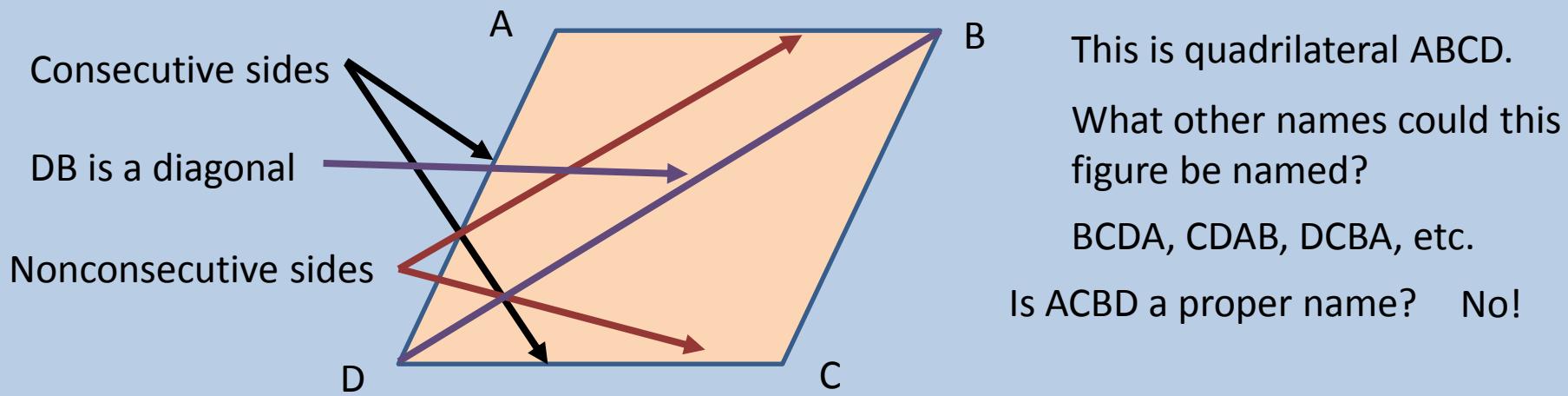
Chapter 8.1 Quadrilaterals

Objectives:

- Students will identify quadrilaterals and determine the sum of interior angles.

A **quadrilateral** is a closed geometric figure with four sides and four vertices. The sides only intersect at the vertices.

Quadrilaterals are named by listing the vertices in order.



Any two sides, vertices, or angles can be **consecutive** or **nonconsecutive**.

Segments that join nonconsecutive vertices are called **diagonals**.

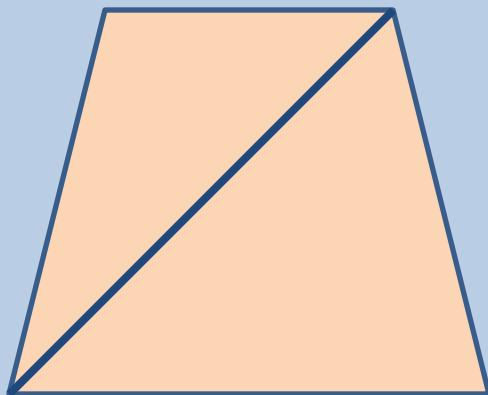
Geometry

Chapter 8.1 Quadrilaterals

Objectives:

- Students will identify quadrilaterals and determine the sum of interior angles.

If the sum of the interior angles of a triangle is 180 degrees, what is the sum of the interior angles of a quadrilateral?



By drawing a diagonal, we construct two triangles.

The sum of the interior angles for each triangle is 180 degrees, so the sum of the interior angles of the quadrilateral is...

360 degrees

Theorem 8-1: the sum of the measures of the interior angles of a quadrilateral is 360 degrees.

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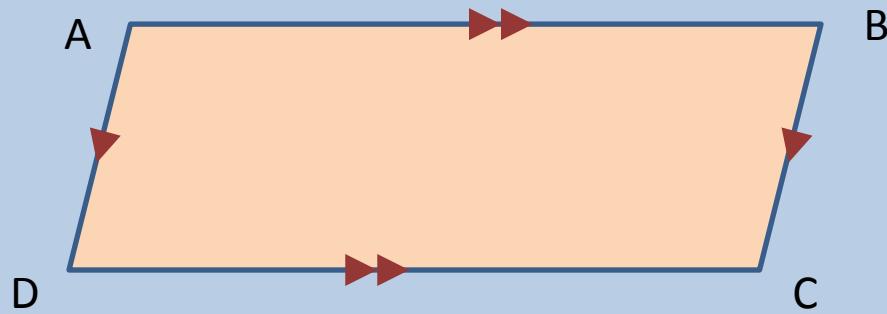
Chapter 8.2 Parallelograms

Objectives:

- Students will identify and use properties of parallelograms.

A **parallelogram** is a quadrilateral with two pairs of opposite sides parallel.

The symbol used for a parallelogram ABCD is \square ABCD.



Notice that $AB \parallel CD$ and $AD \parallel BC$.

What kind of angles are consecutive angles in a parallelogram?

Consecutive Interior Angles

What do we know about consecutive interior angles? They are supplementary

Is the distance between parallel lines always constant? Yes

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Chapter 8.2 Parallelograms

Objectives:

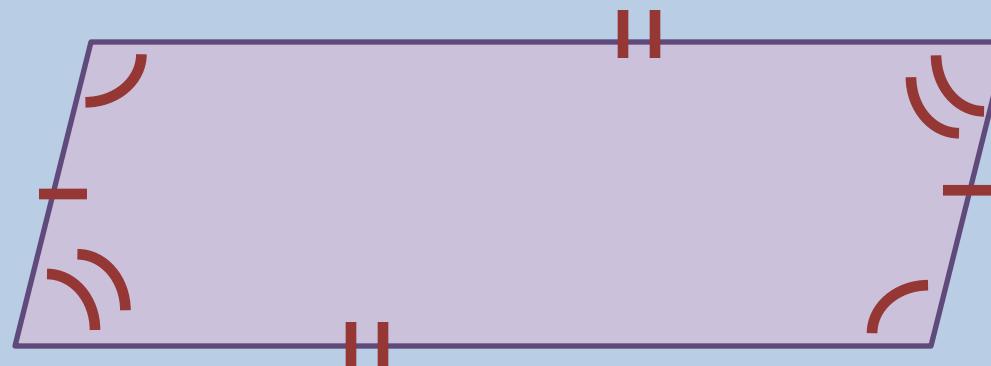
- Students will identify and use properties of parallelograms.

The following theorems are presented in a different order than the book due to the order of proofs.

Theorem 8-3: Opposite sides of a parallelogram are congruent.

Theorem 8-4: Consecutive angles of a parallelogram are supplementary.

Theorem 8-2: Opposite angles of a parallelogram are congruent.



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Chapter 8.2 Parallelograms

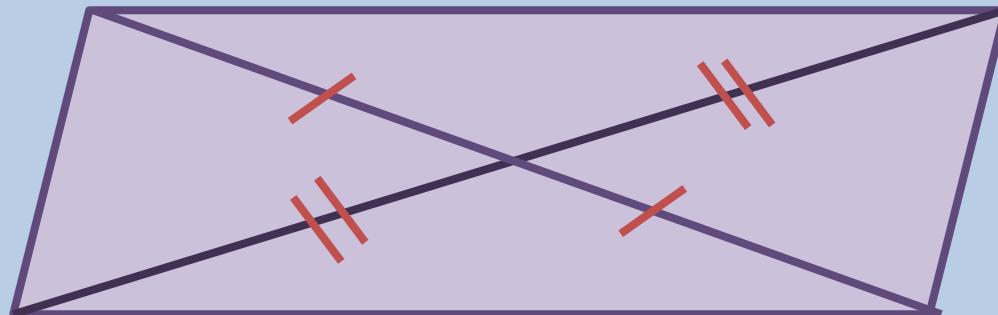
Objectives:

- Students will identify and use properties of parallelograms.

The following theorems are presented in a different order than the book due to the order of proofs. You will prove these on Friday's assessment

Theorem 8-6: A diagonal of a parallelogram separates the parallelogram into two congruent triangles.

Theorem 8-5: The diagonals of a parallelogram bisect each other.



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Chapter 8.3 Tests for Parallelograms

Objectives:

- Students will identify and use tests to prove quadrilaterals are parallelograms.

Theorem 8-3 stated that the opposite sides of a parallelogram are congruent. The converse is also true.

Theorem 8-7: If both pairs of opposite sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram.

Can you construct a quadrilateral with both pairs of opposite sides congruent and not have a parallelogram?

Theorem 8-8: If one pair of opposite sides of a quadrilateral is parallel and congruent, then the quadrilateral is a parallelogram.

Can you construct a quadrilateral with a pair of opposite sides that are parallel and congruent and not have a parallelogram?

Theorem 8-9: If the diagonals of a quadrilateral bisect each other, then the quadrilateral is a parallelogram.

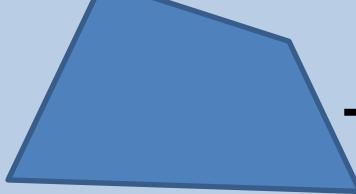
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Chapter 8.4 Rectangles, Rhombi, and Squares

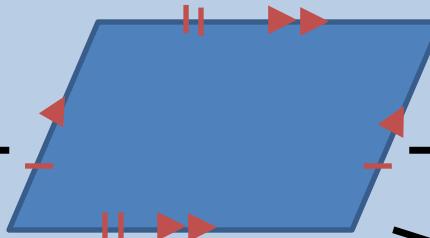
Objectives:

- Students will identify and use properties of rectangles, rhombi, and squares.

Previous lessons taught us about quadrilaterals and parallelograms. Now we will learn about rectangles, rhombi, and squares.

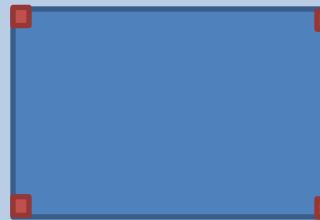


Quadrilateral:
any four sided figure.

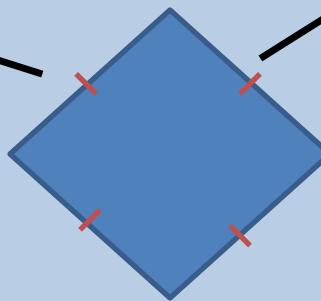


Parallelogram:
opposite sides parallel
opposite sides congruent

Rectangle:
parallelogram with
4 right angles.



Square:
parallelogram with
4 right angles and
4 congruent sides.



Rhombus:
parallelogram with 4 congruent sides.

Geometry

Chapter 8.4 Rectangles, Rhombi, and Squares

Objectives:

- Students will identify and use properties of rectangles, rhombi, and squares.

It is important to understand that all four-sided figures are quadrilaterals and all parallelograms, rectangles, rhombi, and squares are quadrilaterals; however, not all quadrilaterals are not parallelograms.

Also, all squares are rhombi, rectangles, and parallelograms; but not all parallelograms, rectangles, or rhombi, are squares.

Theorem 8-10: The diagonals of a rectangle are congruent.

Theorem 8-11: The diagonals of a rhombus are perpendicular.

Theorem 8-12: Each diagonal of a rhombus bisects a pair of opposite angles.

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Chapter 8.5 Trapezoids

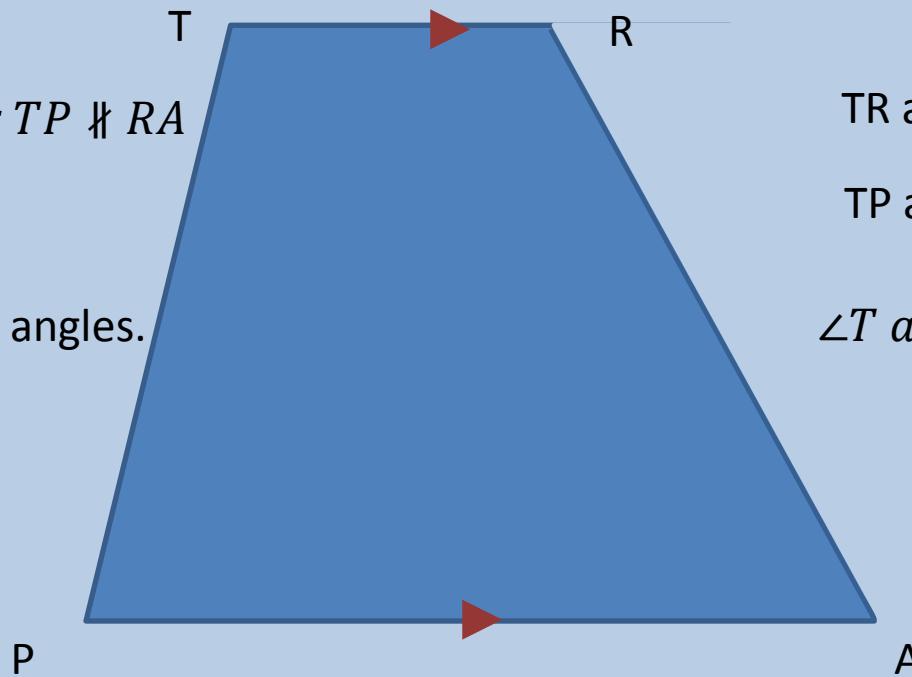
Objectives:

- Students will identify and use properties of trapezoids and isosceles trapezoids.

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

The parallel sides are called **bases**. The nonparallel sides are called **legs**.

Each trapezoid has two pairs of **base angles**.



$TR \parallel PA$; however $TP \not\parallel RA$

TR and AP are bases.

TP and AR are legs.

$\angle A$ and $\angle P$ are base angles.

$\angle T$ and $\angle R$ are base angles.

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Chapter 8.5 Trapezoids

Objectives:

- Students will identify and use properties of trapezoids and isosceles trapezoids.

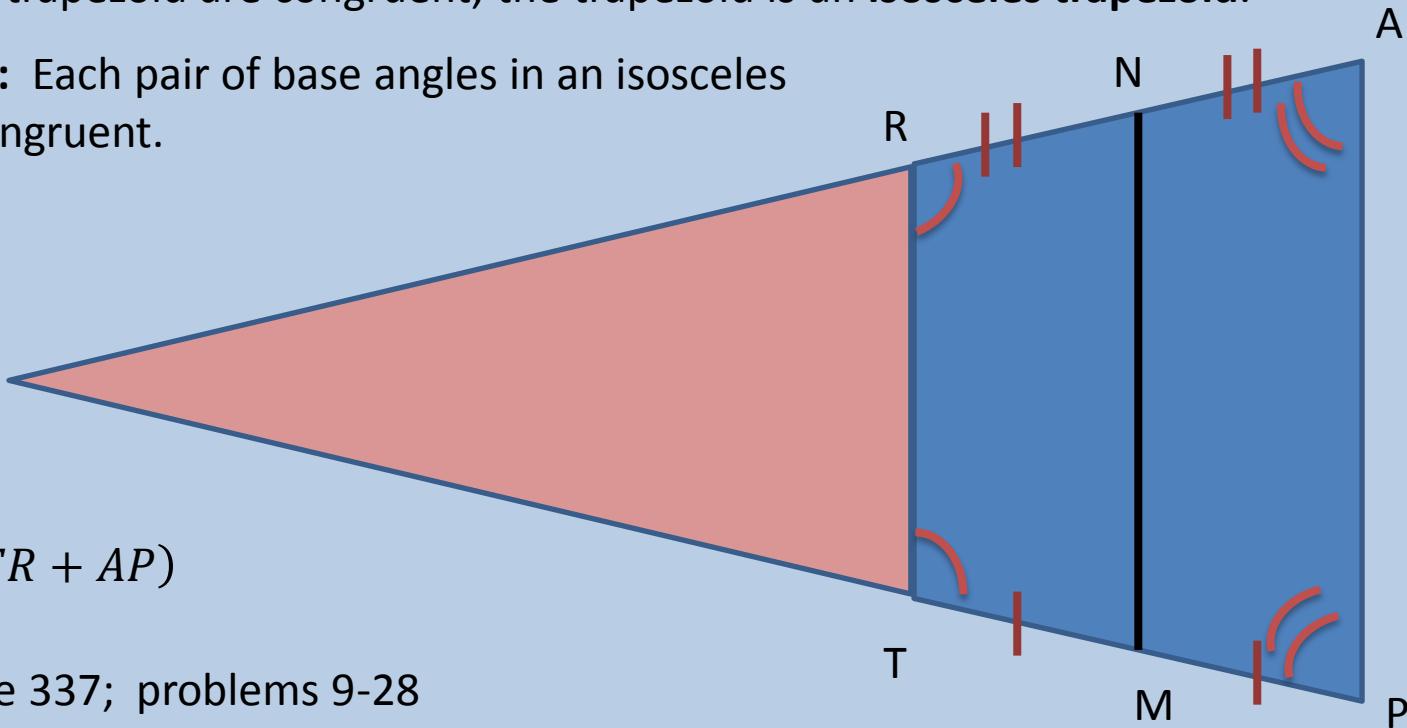
The **median** of a trapezoid is the segment that joins the midpoints of its legs.

Theorem 8-13: The median of a trapezoid is parallel to the bases and the length of the median equals one-half the sum of the lengths of the bases.

If the legs of a trapezoid are congruent, the trapezoid is an **isosceles trapezoid**.

Theorem 8-14: Each pair of base angles in an isosceles trapezoid is congruent.

$$MN = \frac{1}{2}(TR + AP)$$



Bookwork: page 337; problems 9-28