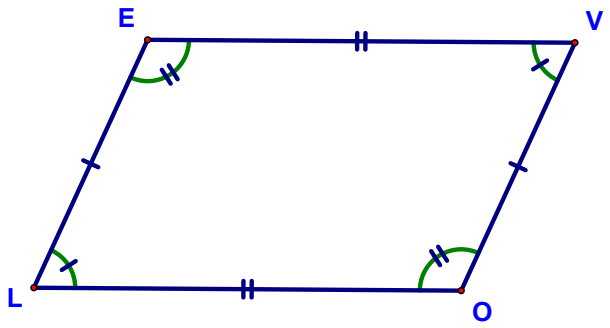
Properties of Quadrilaterals - Lesson 5-5

Here's today's warmup!

Elena used a rectangle, a square, a kite, a rhombus, and an isosceles trapezoid as part of a computer game she was creating. The player selects two of these shapes at random. If each of the selected shapes has at least one pair of opposite sides parallel, the player can use these shapes as keys to a higher level of the game. What is the probability of selecting a pair of keys?

Today, we're going to cover a whole bunch of properties of different quadrilaterals...check these out and make sure you know them!!

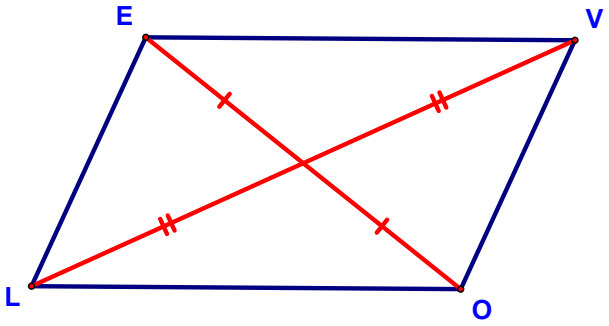


A *parallelogram* is a quadrilateral with 2 pairs of parallel opposite sides.

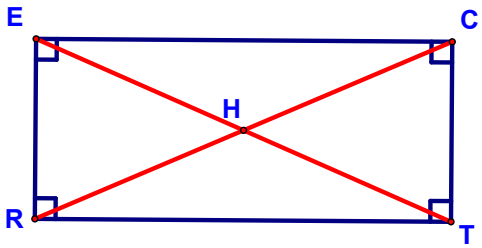
The opposite sides of a parallelogram are congruent.

The opposite angles of a parallelogram are congruent.

The consecutive angles of a parallelogram are supplementary.



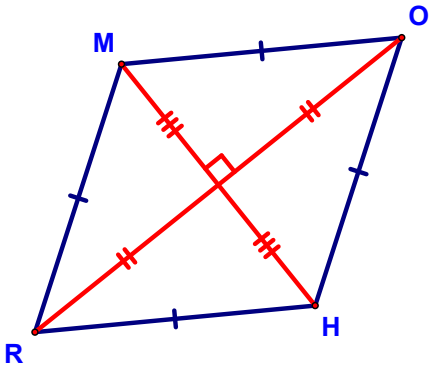
The diagonals of a parallelogram bisect each other.



A *rectangle* is an equiangular parallelogram.

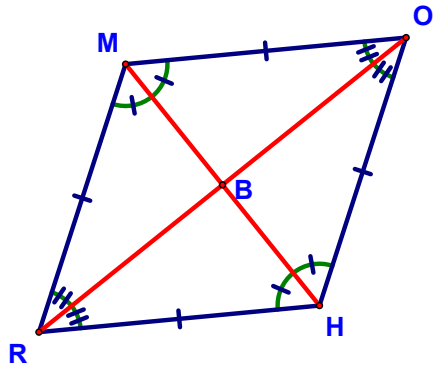
All ∠s of a rectangle are right ∠s

The diagonals of a rectangle are congruent.



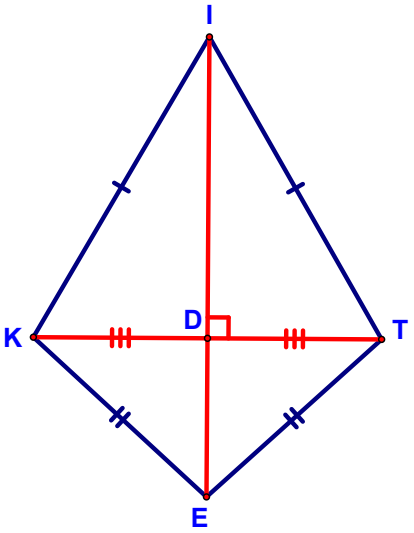
A *rhombus* is an equilateral parallelogram.

The diagonals of a rhombus are ⊥ bisectors of each other.



The diagonals of a rhombus bisect the ∠s of the rhombus.

The diagonals of a rhombus divide the rhombus into 4 ≅ △s.

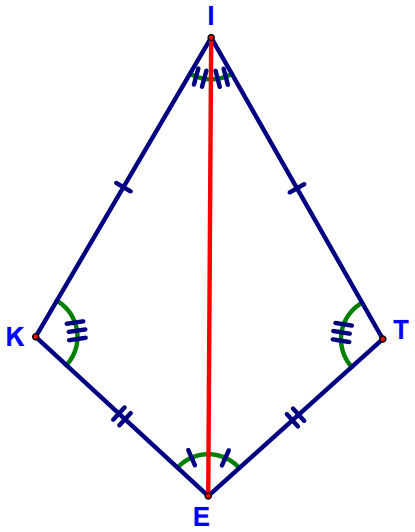


***A kite* is a quadrilateral with exactly two pairs of distinct congruent consecutive sides.**

***The vertex angles of a kite* are those angles that are between each pair of congruent sides. The *non-vertex angles* are the other two!**

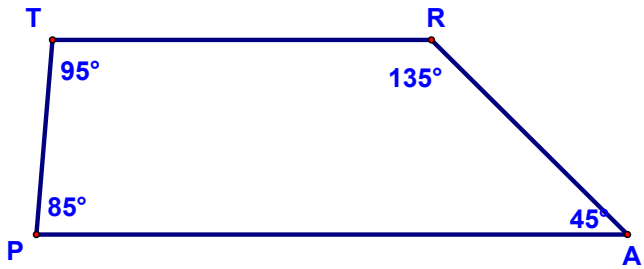
The diagonals of a kite are ⊥

The diagonal connecting the vertex ∠s of a kite is the ⊥ bisector of the other diagonal



The nonvertex ∠s of a kite are congruent.

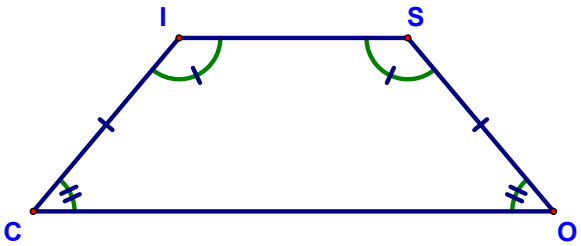
The vertex ∠s of a kite are bisected by a diagonal.



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

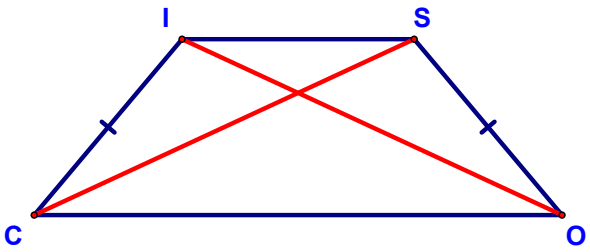
The parallel sides of a trapezoid are called the *bases* and a pair of angles that share a base as a common side are called *base angles*.

The consecutive angles between the bases of a trapezoid are supplementary.



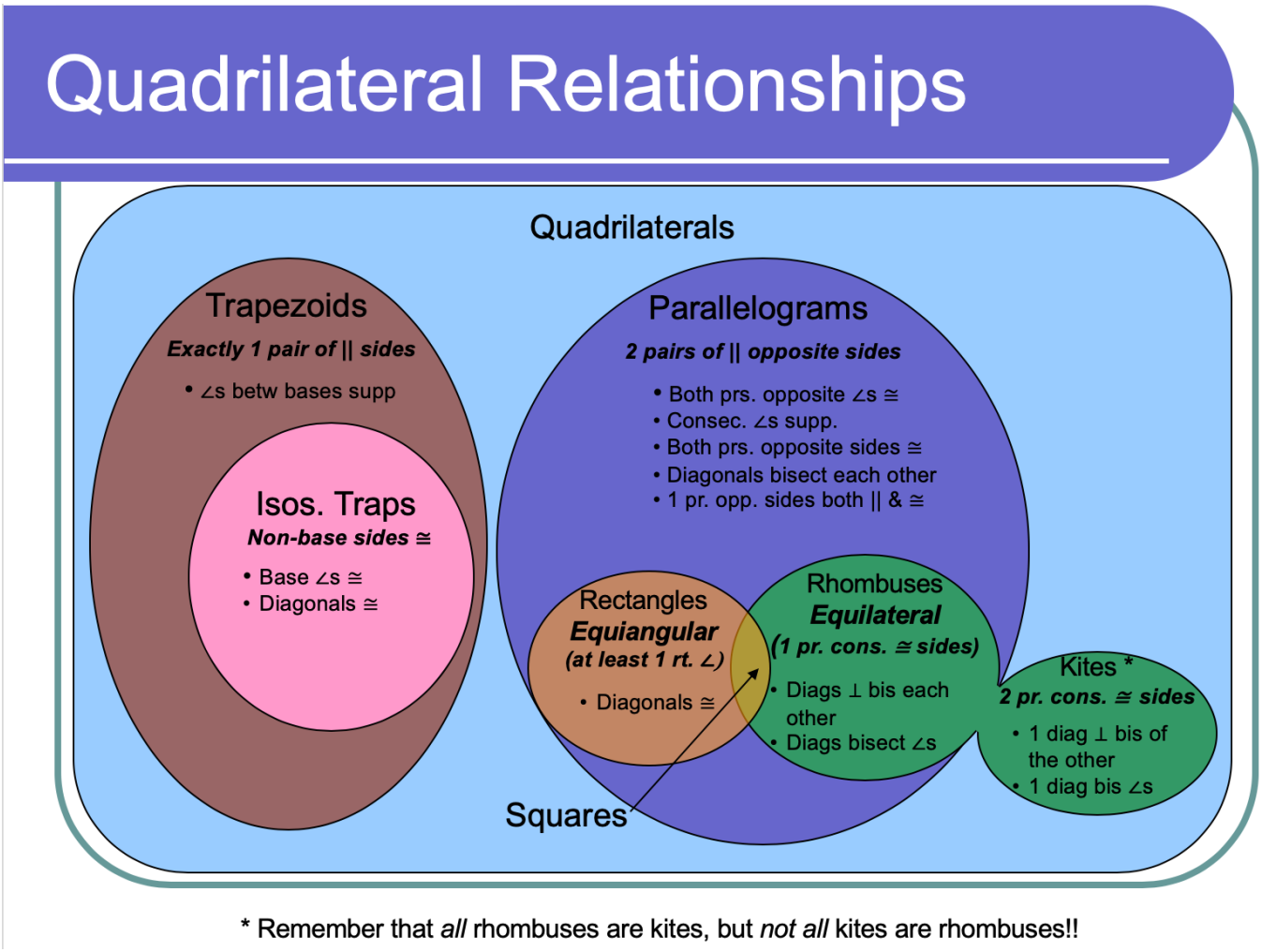
An *isosceles trapezoid* is a trapezoid in which the two non-parallel (non-base) sides are congruent.

The base angles of an isosceles trapezoid are congruent.



The diagonals of an isosceles trapezoid are congruent.

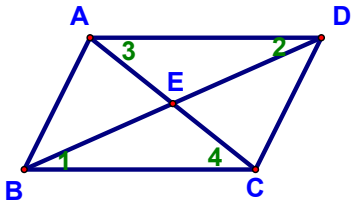
We will wrap up this discussion with the Venn Diagram. Make sure that you know this thing inside and out...it will be the key to doing well on the Chapter 5 Test!!



and here is an example proof using this stuff!

Given: ▱ABCD

Prove: $\overline{AC}$ and $\overline{DB}$ bisect each other



Statements	Reasons