Geometry Tuesday 2-19-13 Class Notes

Ch. 6-2 Properties of Parallelograms

Ch 6-3 Conditions for Parallelograms

Ch 6-4 Properties of Special Parallelograms

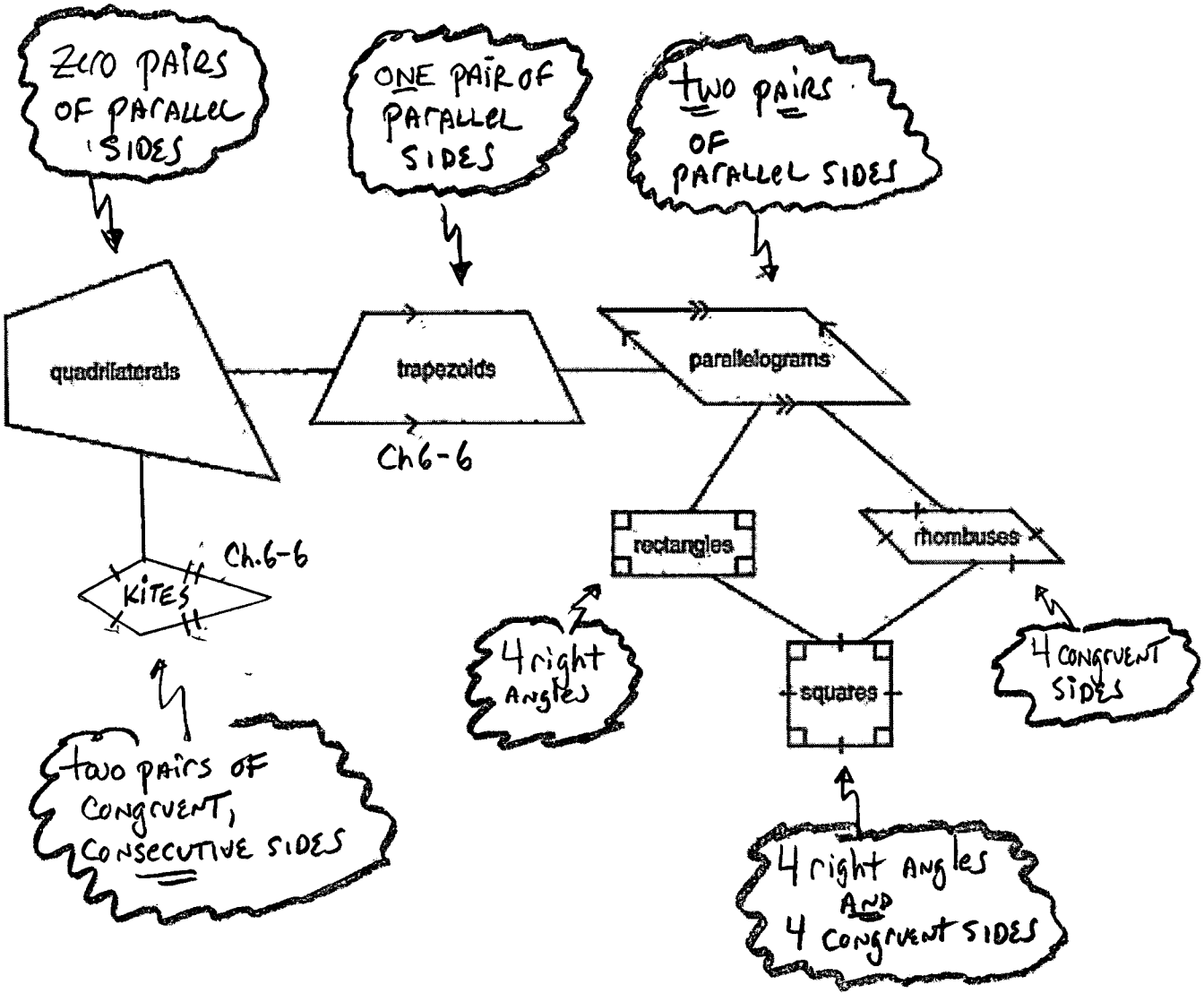
- Rectangles
- Rhombus
- Square

Ch 6-5 Conditions for Special Parallelograms

Ch. 6-2 to 6-5 ⇒ PARALLELOGRAMS

FAMILY OF QUADRILATERALS

DEFINE

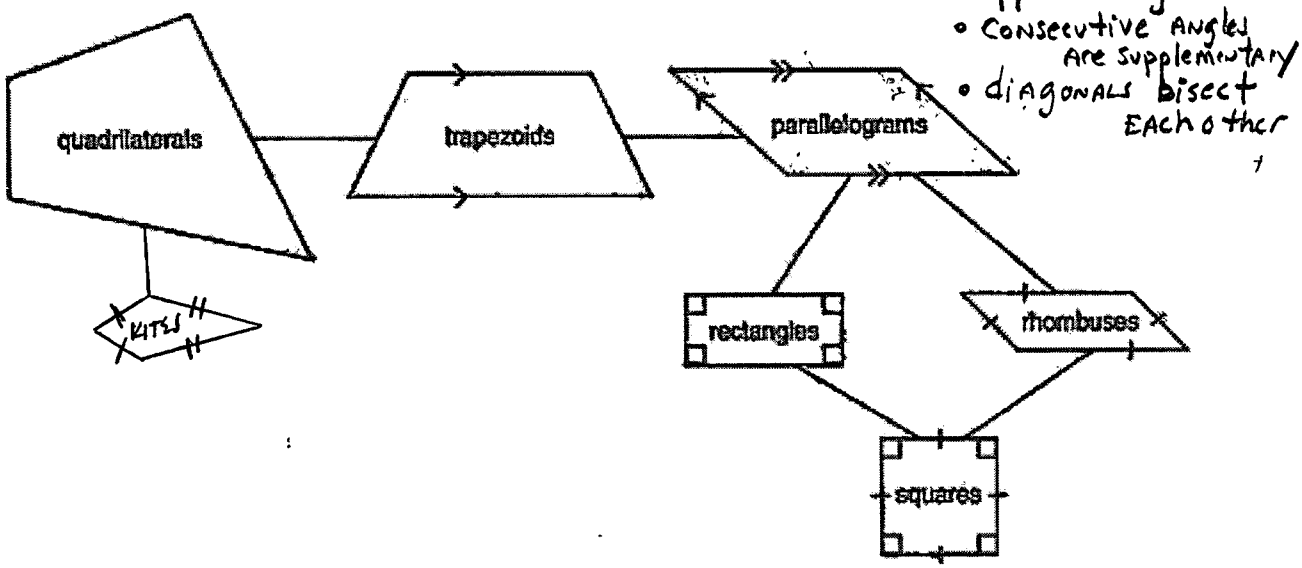


Parallelograms

Ch 6-2 – Properties

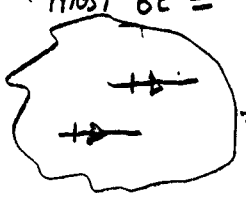
Ch. 6-2

- opposite sides ≅
- opposite Angles ≅
- Consecutive Angles Are Supplementary
- diagonals bisect Each other



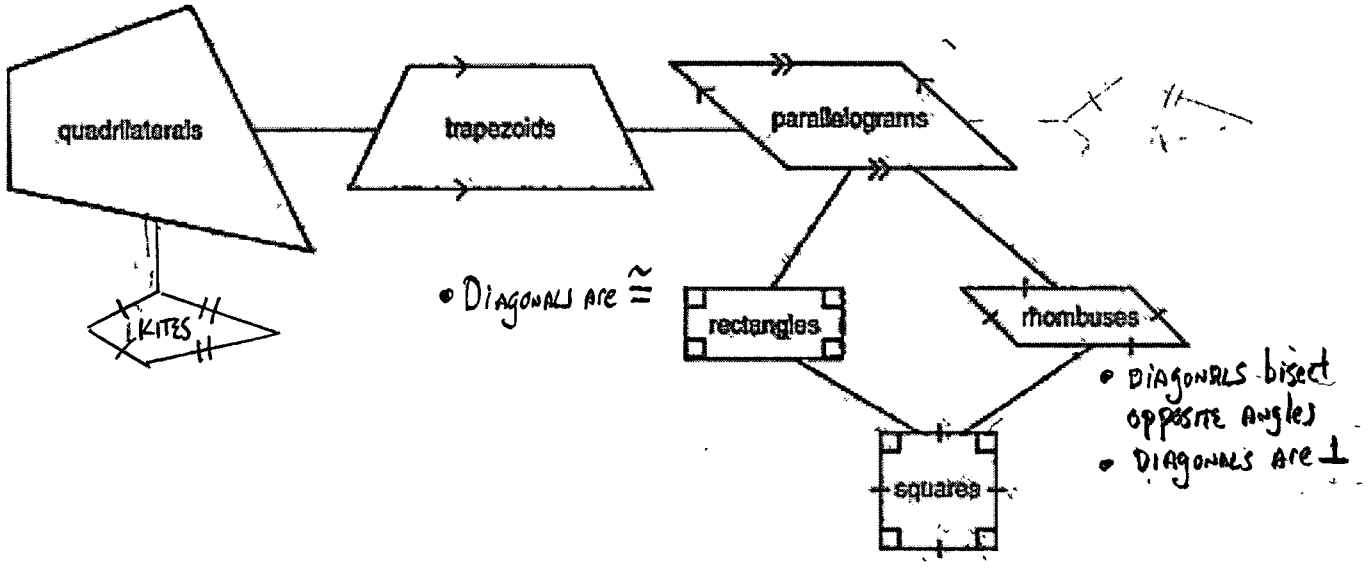
Ch 6-3 – Pg 413

To show you have a parallelogram, you only have to show you meet ONE of these conditions:



- Both pairs of opposite sides are parallel
- ONE pair of opposite sides are parallel (AND) congruent
- Both pairs of opposite sides are congruent
- Both pairs of opposite Angles are congruent
- ONE Angle is supplementary to both of its consecutive Angles
- The diagonals bisect each other.

Ch.6-4 Properties of Rect., Rhombi, Squares

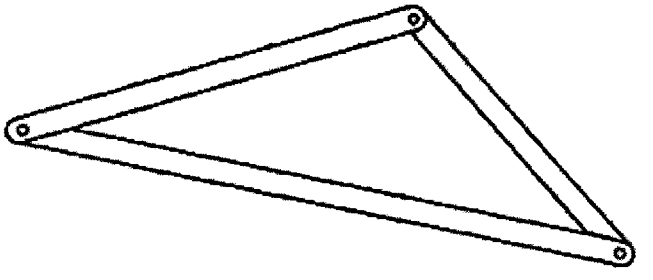


Ch.6-5 Conditions for Rectangles, Rhombi, ...

- If ONE Angle of a parallelogram is 90°, it is a rectangle.
- (CARPENTERS TOOL) If diagonals of a parallelogram are ≅, it is a rectangle.
- If ONE pair of consecutive sides of a parallelogram are ≅, it is a rhombus.
- If diagonals of parallelogram are ⊥, it is a rhombus.
- If ONE diagonal of a parallelogram bisects a pair of opposite angles, it is a rhombus.

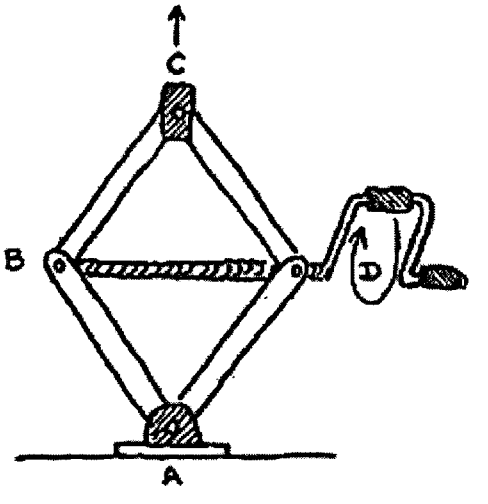
A COMMON APPLICATION OF A RHOMBUS

82 Variable based triangles



The essential property of a triangle is its rigidity and this is exploited time and time again in static structures such as in the timber framework of a roof.

However an observant individual will also notice how the designer and the engineer have made use of triangle structures where one side of the triangle can vary in length. Several designs of car jacks make use of this idea. The one shown here consists of a four-bar linkage *ABCD* in the shape of a rhombus which is split into two triangles by a screw mechanism forming the diagonal *BD*. As the screw is turned clockwise the points *B* and *D* are pulled together thus shortening the base of the triangles *BCD* and *BAD* with the effect of increasing the height of both triangles and hence lifting the car.



How does the height of *C* change with the change in length of *BD*? Investigate this with a car jack or a model made from geostrip or card.