Congruence for Quadrilaterals

Let's investigate how congruence for quadrilaterals is similar to and different from congruence for triangles.

15.1 True or . . . Sometimes True? Parallelograms

Given that $ABCD$ is a parallelogram:

1. What must be true?

2. What could possibly be true?

3. What definitely can't be true?

15.2 Floppy Quadrilaterals

Jada is learning about the triangle congruence theorems: Side-Side-Side, Angle-Side-Angle, and Side-Angle-Side. She wonders if there are any theorems like these for parallelograms.

1. If 2 parallelograms have all 4 pairs of corresponding sides congruent, do the parallelograms have to be congruent? If so, explain your reasoning. If not, use the tools available to show that it doesn't work.

2. In parallelograms $ABCD$ and $EFGH$, segment AB is congruent to segment EF, segment BC is congruent to segment FG, and angle ABC is congruent to angle EFG. Are $ABCD$ and $EFGH$ congruent? If so, explain your reasoning. If not, use the tools available to show that it doesn't work.

15.3 Make Your Own Congruence Theorem

Come up with another criteria that is enough to be sure that 2 parallelograms are congruent. Try to use as few measurements as you can. Be prepared to convince others that your shortcut works.

Are you ready for more?

1. Will your rule work for any quadrilateral, not just parallelograms?
2. If it does, justify your rule. If it doesn't, adjust your rule so it works for any quadrilateral, and justify your new rule.