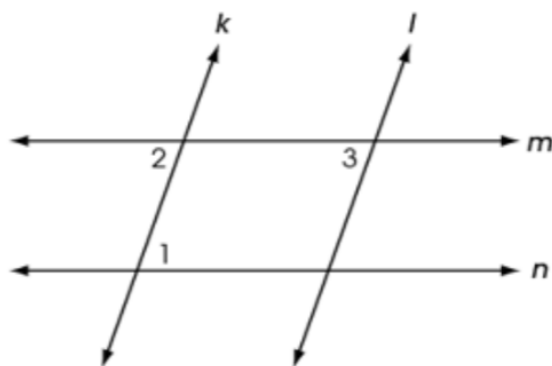


Quadrilaterals

Proof.

Problem 1 Adapted from Ohio's 2017 Geometry released item 13.

Two pairs of parallel lines intersect to form a parallelogram as shown.



Complete the following proof that opposite angles of a parallelogram are congruent:

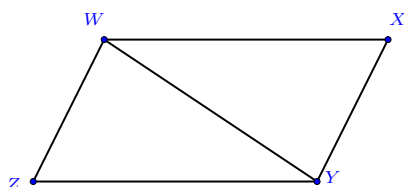
- (a) $\angle 1 \cong \angle 2$ as (opposite angles / alternate interior angles ✓ / corresponding angles) for parallel lines (m and n ✓ / k and l).
- (b) $\angle 3 \cong \angle 2$ as (opposite angles / alternate interior angles / corresponding angles ✓) for parallel lines (m and n / k and l ✓).
- (c) Then $\angle 1 \cong \angle 3$ because they are both congruent to $\angle 2$.

Problem 2 Adapted from Ohio's 2018 Geometry released item 21.

Given the parallelogram $WXYZ$, prove that $\overline{WX} \cong \overline{YZ}$.

Learning outcomes:

Author(s): Brad Findell



Fix note: It really would help to have an online environment that allows students to mark diagrams.

Complete the proof below:

- (a) $\angle ZWY \cong \angle XYW$ as (alternate interior angles ✓/ corresponding angles/ opposite angles) for parallel segments (\overline{WZ} and \overline{XY} ✓/ \overline{WX} and \overline{YZ}).
- (b) $\angle ZYW \cong \angle XWY$ for the same reason, this time for parallel segments (\overline{WZ} and \overline{XY} / \overline{WX} and \overline{YZ} ✓).
- (c) $\overline{WY} \cong \overline{YW}$ because a segment is congruent to itself.
- (d) $\triangle WYZ \cong \triangle YWX$ by (SAS/ ASA ✓/ SSS).
- (e) Then $\overline{YZ} \cong \overline{WX}$ as corresponding parts of congruent triangles.

Fix note: Maybe number the angles.