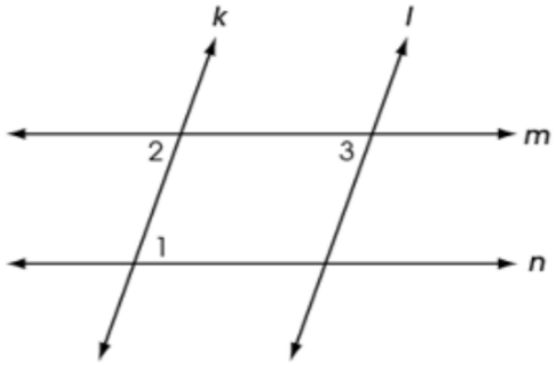
Quadrilaterals

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* $\overline{WX} \cong \overline{YZ}$*.*

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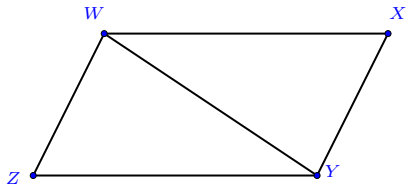

Fixnote: It really would help to have an online environment that allows students to mark diagrams.

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.*

Fixnote: Maybe number the angles.