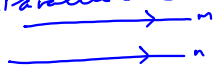
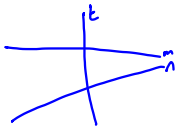
7.8 Proofs and Parallel Lines

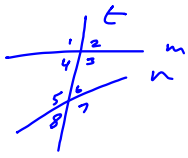
Parallel Lines



$m \parallel n$



transversal
A line that intersects at least 2 lines at dif. points

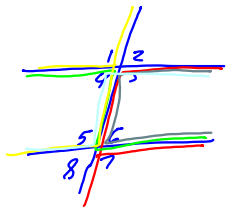


$\angle 1, \angle 5$ Corresponding $\angle$'s
$\angle 2, \angle 6$ same side of transversal
$\angle 4, \angle 8$ same side of lines
$\angle 3, \angle 7$

$\angle 3, \angle 5$ Alternate Interior $\angle$'s
$\angle 4, \angle 6$ Alt side of transversal between lines

Co-Interior $\angle$'s

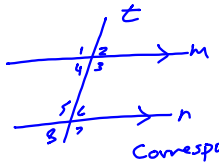
$\angle 4, \angle 5$ Same side of transversal between lines
$\angle 3, \angle 6$



corresponding $\angle$

Alt Int $\angle$

co-interior $\angle$

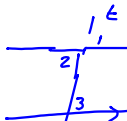


If two lines are parallel and cut by a transversal

Corresponding $\angle$ Ps
then the corresponding $\angle$'s are congruent
$m\angle 1 = m\angle 5$ $m\angle 2 = m\angle 6$, $m\angle 4 = m\angle 8$, $m\angle 3 = m\angle 7$

Alternate Int. $\angle$'s Thm
then the Alt Int $\angle$'s are congruent
$m\angle 4 = m\angle 6$, $m\angle 3 = m\angle 5$

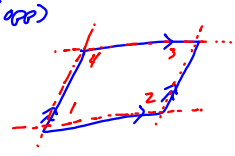
Co-Interior $\angle$'s Thm
then the Co-interior $\angle$s are supplementary
$m\angle 4 + m\angle 5 = 180$ $m\angle 3 + m\angle 6 = 180$



Given $m \parallel n$
Prove: $m\angle 2 = m\angle 3$

$m \parallel n$	given
$m\angle 1 = m\angle 3$	corresponding $\angle$'s Post
$m\angle 1 = m\angle 2$	Vertical $\angle$'s
$m\angle 2 = m\angle 3$	substitution

Parallelogram
two pairs of parallel sides
(opp)



$m\angle 1 + m\angle 2 = 180$
$m\angle 1 + m\angle 4 = 180$
$m\angle 2 = m\angle 4$

A quadrilateral is a parallelogram if . . .

1. Consecutive angles are supplementary
2. Opposite angles are congruent