

6.2 Properties of Parallelograms

Objective: To use relationships among sides and angles of parallelograms

To use relationships among diagonals of parallelograms

A parallelogram is a quadrilateral with both pairs of opposite sides parallel.

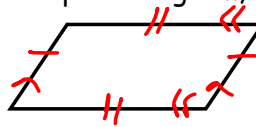
In a quadrilateral, opposite sides do not share a vertex and opposite angles do not share a side.



Abbreviation symbol for parallelogram and parallelograms.



Theorem 6.3: If a quadrilateral is a parallelogram, then its opposite sides are congruent.



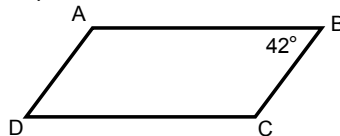
Angles of a polygon that share a side are consecutive angles.

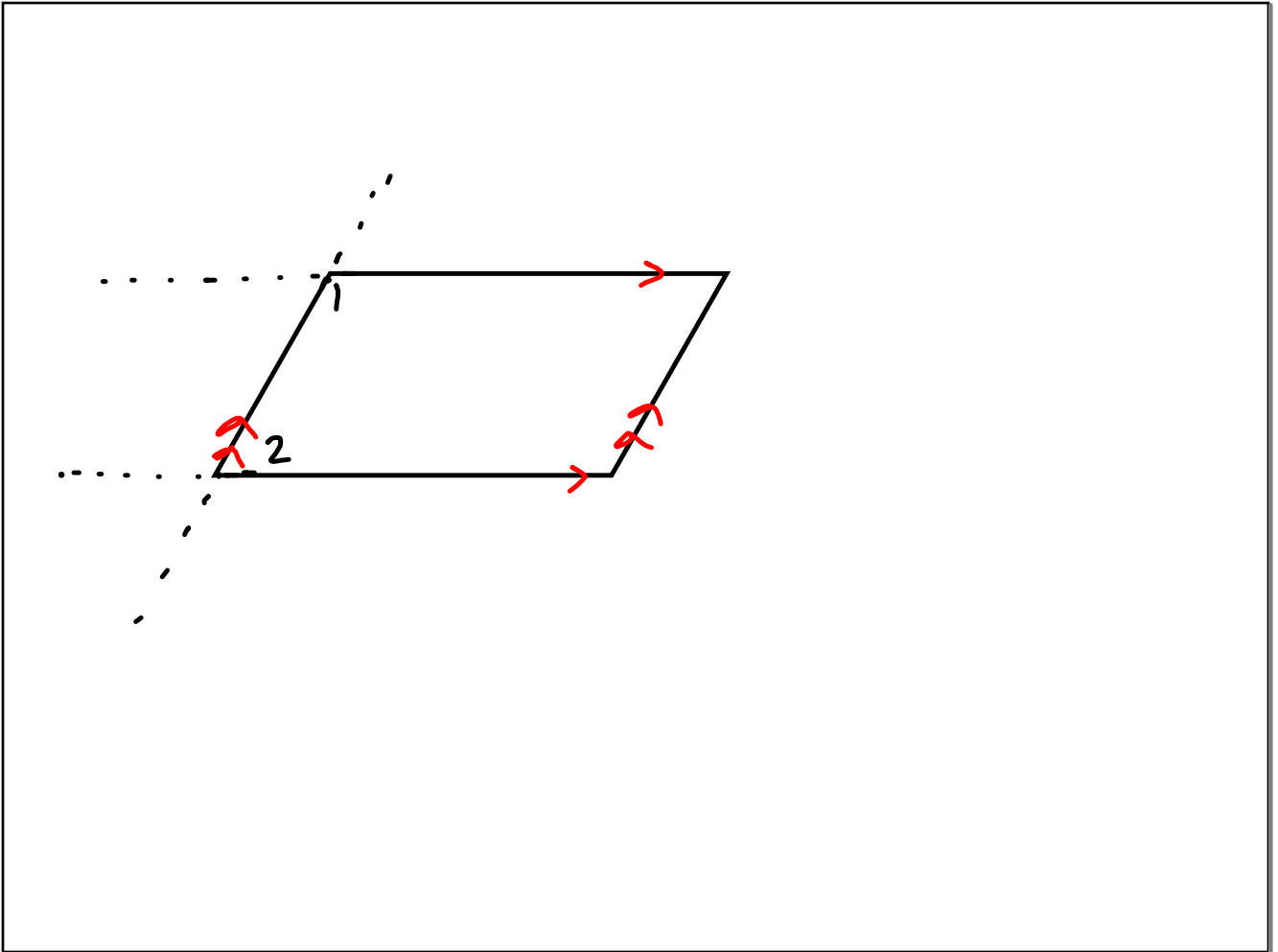


Theorem 6.4: If a quadrilateral is a parallelogram, then its consecutive angles are supplementary.

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

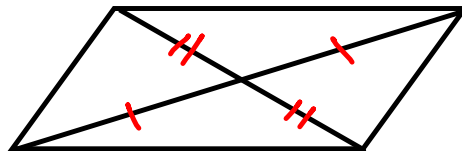
Example 1: Find the measures of the angles in the parallelogram.



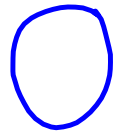
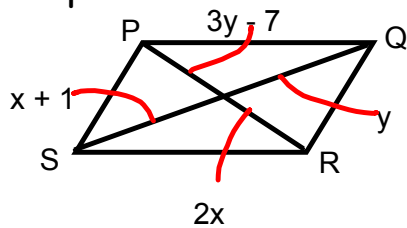


Theorem 6.5: If a quadrilateral is a parallelogram, then its opposite angles are congruent.

Theorem 6.6: If a quadrilateral is a parallelogram, then its diagonals bisect each other.



Example 2: Find the values of the variables. What are PR and SQ?



Theorem 6.7: If three (or more) parallel lines cut off congruent segments on one transversal, then they cut off congruent segments on every transversal.

Example 3: If $EF=FG=GH=6$ and $AD=15$, what is CD ?

