6.2

Properties of Parallelograms

Exploring...

Open on the Sketchpad website the "6.2 – Properties of Parallelograms" sketch.

1) **<u>Review</u>: DEFINE: Parallelogram**

_____

_____

2) **What is the relationship between the sides of a parallelogram?**

_____

3) **What is the relationship between opposite angles of a parallelogram?**

_____

4) **What is the relationship between consecutive angles of a parallelogram?**

_____

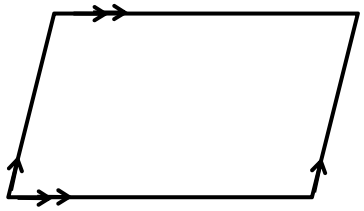
5) **What do the diagonals do to each other in a parallelogram?**

_____

Opposite Sides Theorem

POK

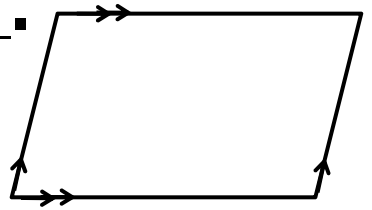
If a quadrilateral is a parallelogram, then the _____ sides are _____.



Opposite Angles Theorem

POK

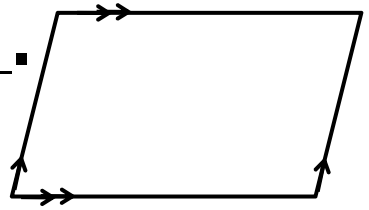
If a quadrilateral is a parallelogram, then the opposite _____ are _____.



Consectuive Angles Theorem

POK

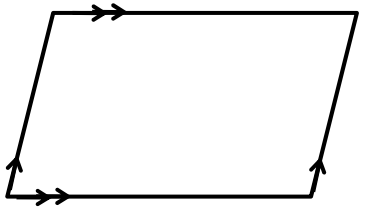
If a quadrilateral is a parallelogram, then the _____ angles are _____.



Parallelogram Diagonals Theorem

POK

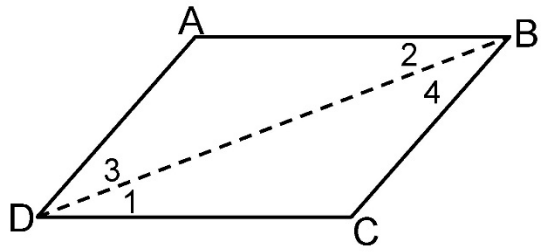
If a quadrilateral is a parallelogram, then the _____ _____ each other.



Proof of the Opposite Sides Theorem

Given: Parallelogram ABCD with diagonal $\overline{BD}$

Prove: $\overline{AB} \cong \overline{CD}$ & $\overline{AD} \cong \overline{CB}$

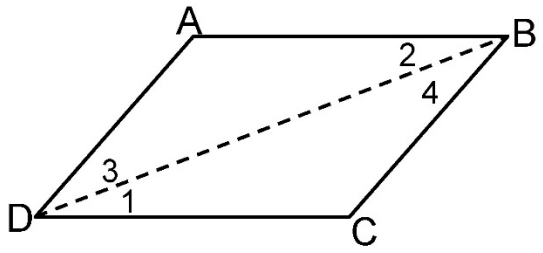


Statement	Reasons
1) Parallelogram ABCD with diagonal $\overline{BD}$	
2) $\overline{AB} \parallel \overline{DC}$, $\overline{AD} \parallel \overline{BC}$	

Proof of the Opposite Angles Theorem

Given: Parallelogram ABCD with diagonal $\overline{BD}$

Prove: $\angle A \cong \angle C$

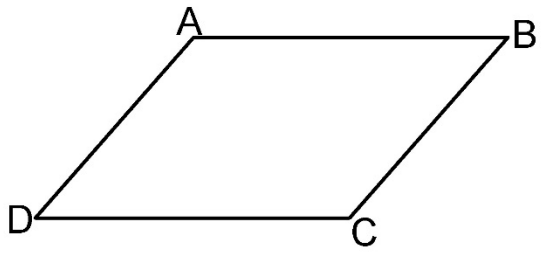


Statement	Reasons
1) Parallelogram ABCD with diagonal $\overline{BD}$	

Proof of the Consecutive Angles Theorem

Given: Parallelogram ABCD

Prove: $\angle A$ & $\angle D$ are supplementary

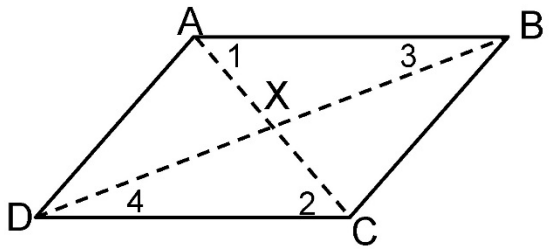


Statement	Reasons
1) Parallelogram ABCD	
2)	

Proof of the Parallelogram Diagonals Theorem

Given: Parallelogram ABCD with diagonals $\overline{AC}$ & $\overline{BD}$

Prove: Diagonals bisect each other



Statement	Reasons
1) Parallelogram ABCD with diagonal $\overline{BD}$	