

Name Key

Secondary 2 Honors

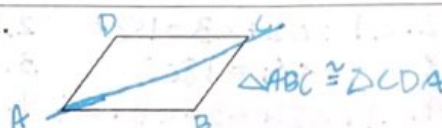

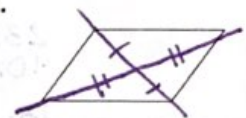
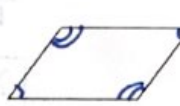
Properties of Parallelograms

Period _____

Notes 1.3

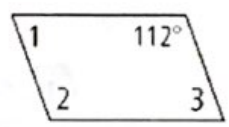
Warm-up: What do you know about parallelograms? What conjectures can you come up with?

4 sides, 4 angles, angles add to 360°

Properties of Parallelograms	
1.	 $\triangle ABC \cong \triangle CDA$
2.	 opposite sides are parallel
3.	
4.	 opposite angles are congruent

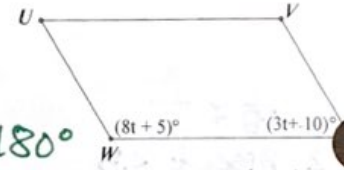
Example Problems:

1. Find the measure of the numbered angles in the parallelogram.



$\angle 2 = 112^\circ$
 $\angle 1 = 180 - 112 = 68^\circ$
 $\angle 3 = 68^\circ$

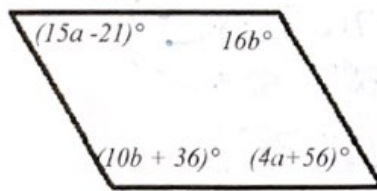
2. What value of t makes $\square UVXW$ a parallelogram?



$8t + 5 + 3t + 10 = 180$
 $11t + 15 = 180$
 $\quad -15 \quad -15$
 $\frac{11t}{11} = \frac{165}{11}$

$t = 15$

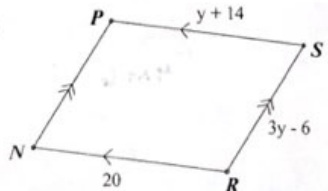
3. Solve for the values of a and b in the parallelogram.



$15a - 21 = 4a + 56$
 $-4a + 21 \quad -4a + 21$
 $\frac{11a}{11} = \frac{77}{11}$
 $a = 7$

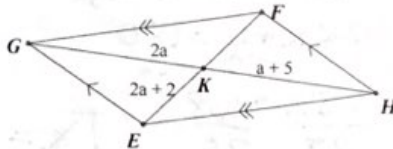
$10b + 36 = 16b$
 $-6b \quad -10b$
 $\frac{36}{6} = \frac{6b}{6}$
 $b = 6$

4. What value of y makes $\square PSRN$ a parallelogram?



$y + 14 = 20$
 $-14 \quad -14$
 $y = 6$

5. Solve for a .



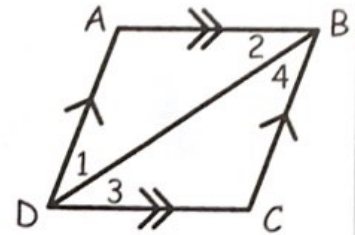
$2a = a + 5$
 $-a \quad -a$
 $a = 5$

*Review of theorems used to prove triangle congruence and corresponding parts of corresponding triangles are congruent.

SSS, SAS, ASA, AAS, and CPCTC.

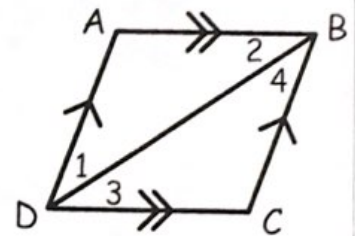
6. Given: $\square ABCD$ is a parallelogram
 Prove: $\triangle ABD \cong \triangle CDB$

Statement	Reason
1. $\square ABCD$ is a parallelogram	1. Given
2. $\angle 1 \cong \angle 4$, and $\angle 2 \cong \angle 3$	2. Alternate Int. Angles
3. $\overline{DB} \cong \overline{BD}$	3. Reflexive Prop.
4. $\triangle ABD \cong \triangle CBD$	4. ASA.



7. Given: $\square ABCD$ is a parallelogram
 Prove: $\overline{AB} \cong \overline{DC}$ and $\overline{AD} \cong \overline{BC}$

Statement	Reason
1. $\square ABCD$ is a parallelogram	1. Given
2. $\triangle ABD \cong \triangle CBD$	2. Previous Proof
3. $\overline{AB} \cong \overline{DC}$, $\overline{AD} \cong \overline{BC}$	3. C.P.C.T.C Corresponding Parts of Congruent Triangles are congruent



8. Given: $\square ABCD$ is a parallelogram,
 Prove: $\angle DAB \cong \angle BCD$ and $\angle ABC \cong \angle CDA$

Statement	Reason
1. $\square ABCD$ is a parallelogram	1. Given
2. $\triangle ABD \cong \triangle CBD$	2. Previous Proof
3. $\angle DAB \cong \angle BCD$, $\angle ABC \cong \angle CDA$	3. CPCTC

