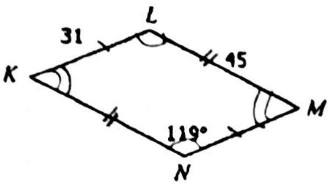
Lesson 2

Name: Key

Date: ________________ Bell: ____ **Homework : Parallelograms**

Directions: If each quadrilateral below is a parallelogram, find the missing measures.

1.



$MN =$ 31

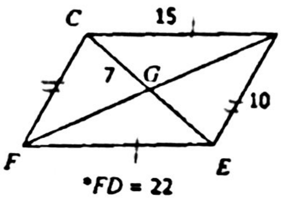
$KN =$ 45

$m\angle K =$ 180-119=61°

$m\angle L =$ 119°

$m\angle M =$ 61°

2.



*FD = 22

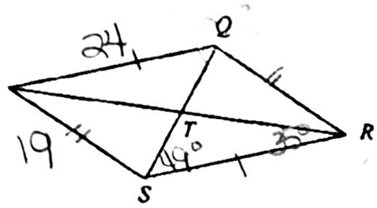
$CF =$ 10

$FE =$ 15

$CE =$ 2(7)=14

$GD =$ 22/2 = 11

3. Given $PQ = 24$, $PS = 19$, $PR = 42$, $TQ = 10$, $m\angle PQR = 106°$, $m\angle QSR = 49°$, and $m\angle PRS = 35°$.



$QR =$ 19

$SR =$ 24

$PT =$ 42/2=21

$SQ =$ 2(10)=20

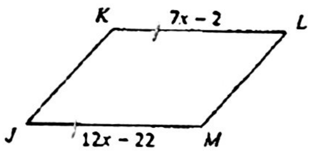
$m\angle QRS =$ 180°-106°=74°

$m\angle PQS =$ 49°

$m\angle RPS =$ 74°-35°=39°

$m\angle PSQ =$ 106-49=57

4. Find KL.



Opp. sides ≅

7x-2=12x-22

20=5x

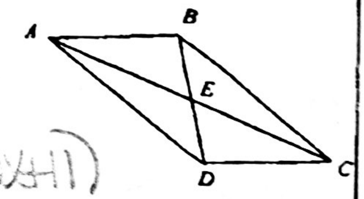
4=x

KL=7x-2

=7(4)-2

=26

5. If $AC = 8x - 14$ and $EC = 2x + 11$, solve for x.



Diagonals bisect each other

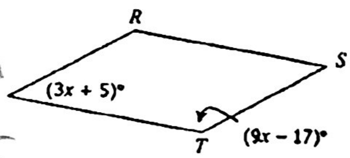
8x-14=2(2x+11)

8x-14=4x+22

4x=36

x=9

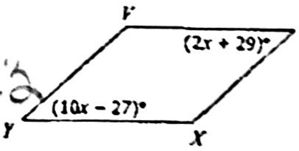
6. Solve for x.



Consecutive ∠'s supplementary

3x+5+9x-17=180

7. Find $m\angle V$.



Opp ∠'s ≅

Consecutive ∠'s supple.

2x+29=10x-27

56 = 8x

7 = x

m∠W=2x+29

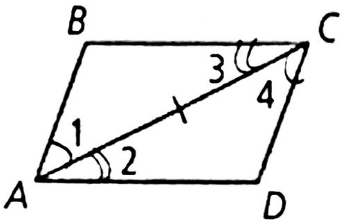
=2(7)+29

=43°

m∠V=180-43=137°

Ex 1) Given: Quadrilateral ABCD is a parallelogram.

Prove: $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{DA}$

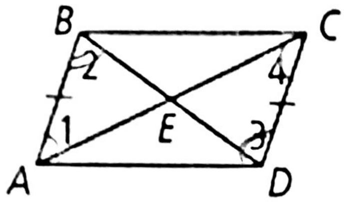


Statement	Reason
1. ABCD is a parallelogram	1. Given
2. $\overline{BC} // \overline{AD}$; $\overline{BA} // \overline{CD}$	2. Definition of a parallelogram
3. $\angle 1 \cong \angle 4$; $\angle 2 \cong \angle 3$	3. Alternate Interior ∠s Theorem
4. $\overline{AC} // \overline{AC}$	4. Reflexive Property of Congruence
5. $\triangle ABC \cong \triangle CDA$	5. ASA
6. $\overline{AB} \cong \overline{CD}$; $\overline{BC} \cong \overline{DA}$	6. CPCTC

∴ If a quadrilateral is a parallelogram then opposite sides are ≅

Ex 2) Given: ▭ABCD is a parallelogram.

Prove: AC and BD bisect each other at E.



Statement	Reason
1. ABCD is a parallelogram	1. Given
2. $\overline{AB} \parallel \overline{DC}$	2. Definition of a parallelogram
3. $\angle 1 \cong \angle 4$; $\angle 2 \cong \angle 3$	3. Alternate Interior ∠s Theorem
4. $\overline{AB} \cong \overline{DC}$	4. If a quadrilateral is a parallelogram then opposite sides are ≅
5. $\triangle ABE \cong \triangle CDE$	5. ASA
6. $\overline{AE} \cong \overline{EC}$; $\overline{BE} \cong \overline{ED}$	6. CPCTC
7. $\overline{AC}$ bisects $\overline{BD}$	7. Definition of segment bisector

∴ If a quadrilateral is a parallelogram then diagonals bisect each other