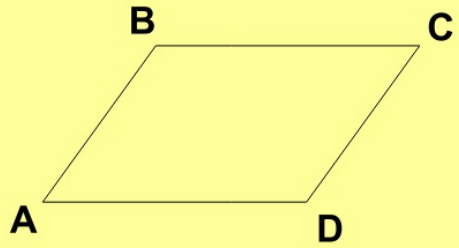
6-2 Properties of Parallelograms

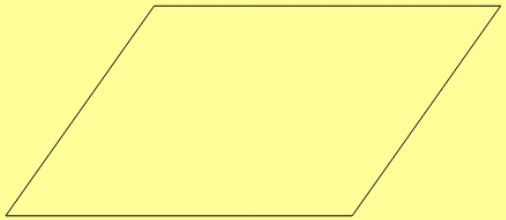
Opposite sides of a parallelogram are congruent.



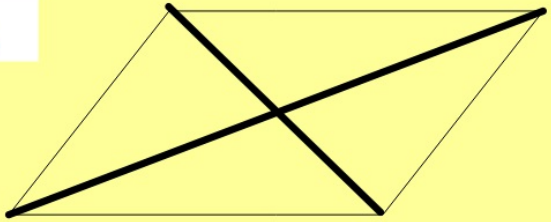
Angles of a polygon that share a side are _____ _____.

Consecutive angles in a parallelogram are _____.

Opposite Angles of a parallelogram are congruent.

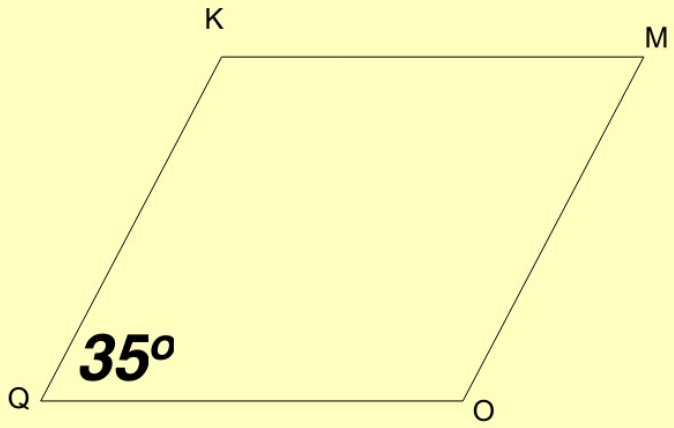


The diagonals of a parallelogram bisect each other.



Using Consecutive Angles

Use ▱KMOQ to find



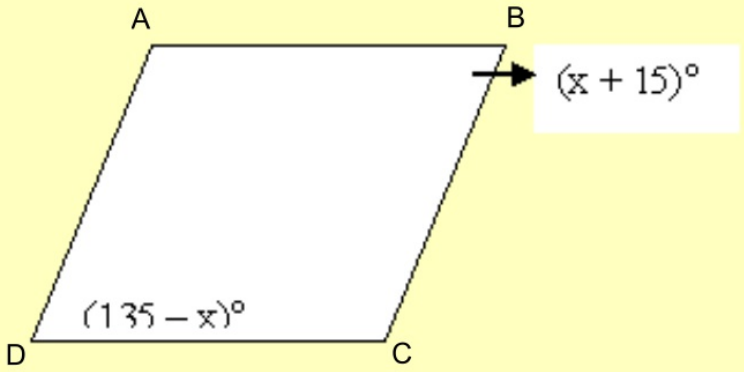
$m\angle O$

$m\angle M$

$m\angle K$

Opposite Angles of a parallelogram are congruent.

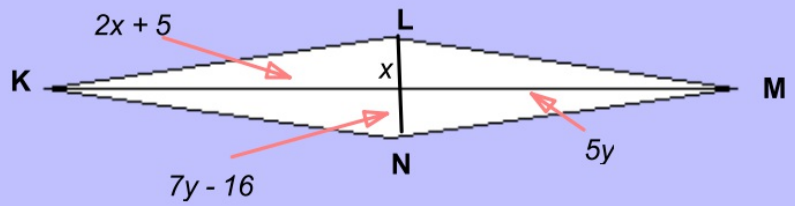
- Find the value of x in parallelogram ABCD. Then find m∠A.



The diagonals of a parallelogram bisect each other.

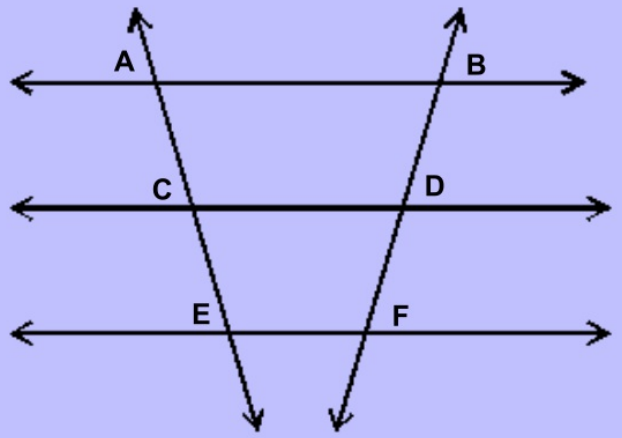
Using Algebra

- Find the values of x and y in ▱KLMN.

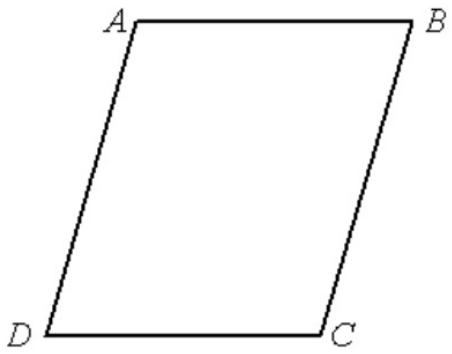


Theorem 6-4: If three (or more) parallel lines cut off congruent segments on one transversal, then they cut off congruent segments on every transversal.

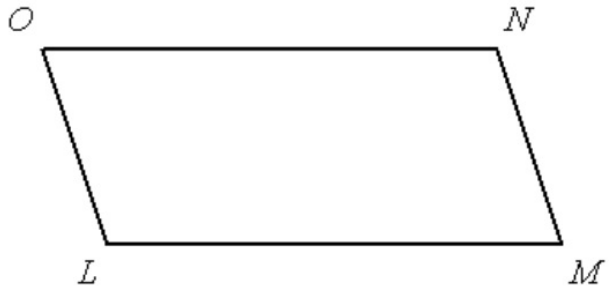
$BD \cong DF$



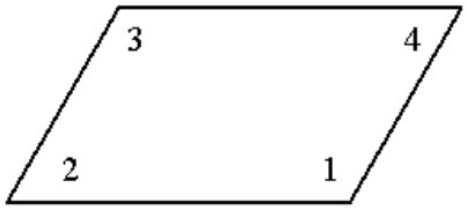
1. $ABCD$ is a parallelogram. If $m\angle CDA = 82$, then $m\angle ABC =$ __?__. The diagram is not to scale.



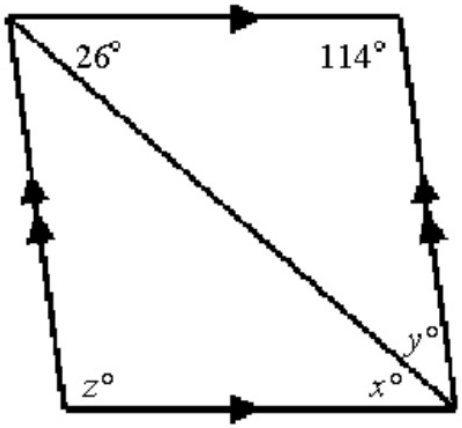
2. $LMNO$ is a parallelogram. If $NM = x + 29$ and $OL = 4x + 5$ find the value of x and then find NM and OL.



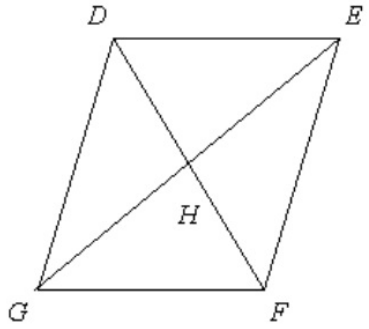
3. For the parallelogram, if $m\angle 2 = 3x - 17$ and $m\angle 4 = 2x - 5$, find $m\angle 1$. The diagram is not to scale.



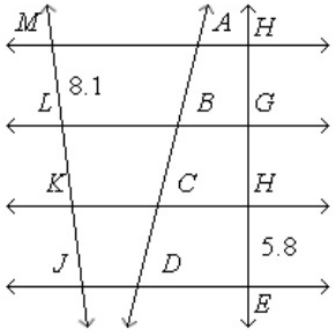
4. Find the values of the variables in the parallelogram. The diagram is not to scale.



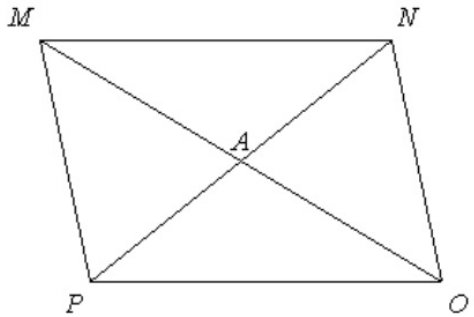
6. In parallelogram $DEFG$, $DH = x + 2$, $HF = 3y$, $GH = 2x - 1$, and $HE = 3y + 1$. Find the values of x and y. The diagram is not to scale.



7. In the figure, the horizontal lines are parallel and $AB = BC = CD$. Find KL and FG. The diagram is not to scale.

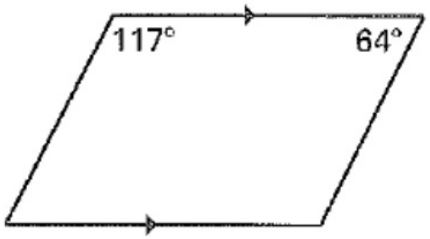


8. Find AM in the parallelogram if $PN = 14$ and $AO = 5$. The diagram is not to scale.

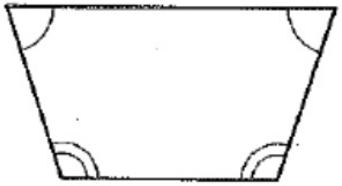


Decide whether each quadrilateral is a parallelogram.
If it is not, explain why not.

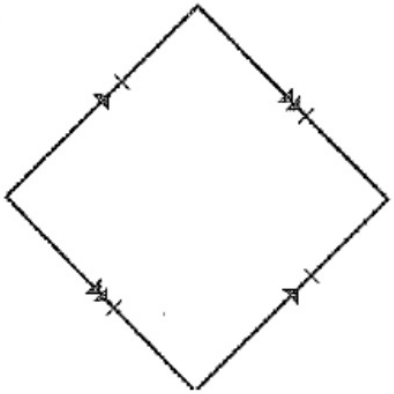
1.



2.

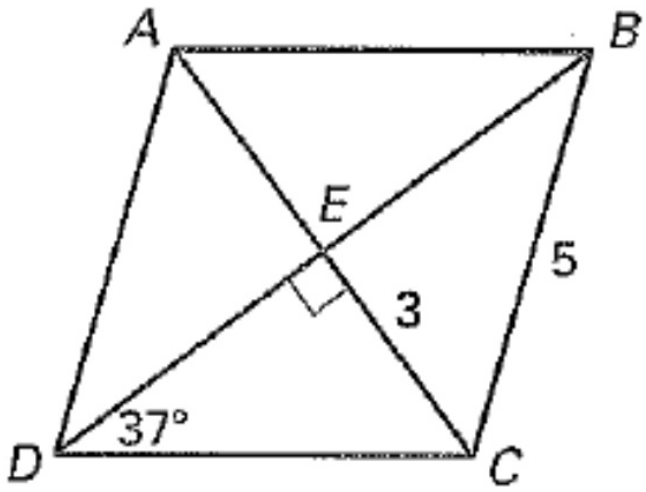


3.



Use the diagram of parallelogram ABCD to find the indicated measures.

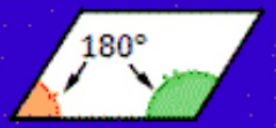
Given: AC ⊥ BD, m<EDC = 35
CE = 3 and CB = 5



4. AE
5. AD
6. EB
7. DB
8. AB
9. Perimeter $\triangle AEB$
10. $m\angle DBA$
11. $m\angle DEC$
12. $m\angle ACD$
13. $m\angle CAB$
14. Perimeter of parallelogram $ABCD$

Objectives: HSG.CO.C.11

- **To use relationships among sides and angles of parallelograms**
- **To use relationships involving diagonals of parallelograms or transversals.**

Sides	...its pairs of opposite sides are congruent.	
Angles	...its pairs of opposite angles are congruent.	
	...its consecutive angles are supplementary.	
Diagonals	...its diagonals bisect each other.	
	...its diagonals form two congruent triangles.	

Assignment:
page 315: 2-30 even, 37-40