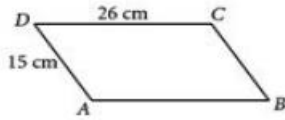


**Section 1: Properties of Parallelograms**

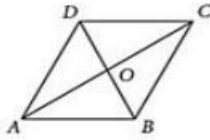
In Exercises 1–7,  $ABCD$  is a parallelogram.

1. Perimeter  $ABCD =$  \_\_\_\_\_



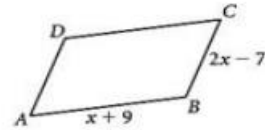
2.  $AO = 11$ , and  $BO = 7$ .

$AC =$  \_\_\_\_\_,  $BD =$  \_\_\_\_\_

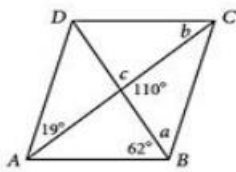


3. Perimeter  $ABCD = 46$ .

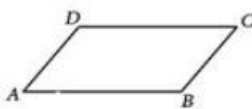
$AB =$  \_\_\_\_\_,  $BC =$  \_\_\_\_\_



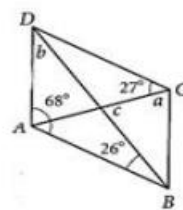
4.  $a =$  \_\_\_\_\_,  $b =$  \_\_\_\_\_,  
 $c =$  \_\_\_\_\_



5. Perimeter  $ABCD = 119$ , and  
 $BC = 24$ .  $AB =$  \_\_\_\_\_



6.  $a =$  \_\_\_\_\_,  $b =$  \_\_\_\_\_,  
 $c =$  \_\_\_\_\_



Find the measure in the parallelogram  $HJK$ .  
Explain your reasoning.

12.  $HI$

13.  $KH$

14.  $GH$

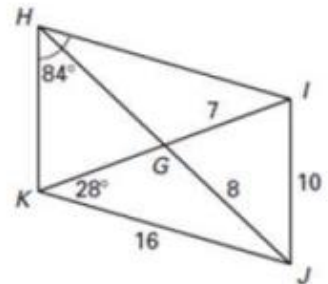
15.  $HJ$

16.  $m\angle KIH$

17.  $m\angle JIH$

18.  $m\angle KJI$

19.  $m\angle HKI$



Quadrilateral  $ABCD$  is a rhombus.

22. If  $m\angle BAE = 32^\circ$ , find  $m\angle ECD$ .

23. If  $m\angle EDC = 43^\circ$ , find  $m\angle CBA$ .

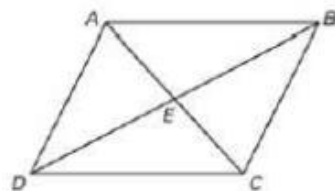
24. If  $m\angle EAB = 57^\circ$ , find  $m\angle ADC$ .

25. If  $m\angle BEC = 3x - 15$ , solve for  $x$ .

26. If  $m\angle ADE = 5x - 8$  and  $m\angle CBE = 3x + 24$ , solve for  $x$ .

27. If  $m\angle BAD = 4x + 14$  and  $m\angle ABC = 2x + 10$ , solve for  $x$ .

28. If  $DC = 12$  and  $ED = 7$ , find  $AD$  and  $AC$ .



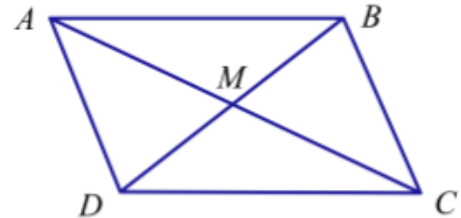
**Section 2: Proofs**

**5 Ways of Showing that a Quadrilateral is a Parallelogram:**

- 
- 
- 
- 
- 

(which one of these is the def. of parallelogram?)

1. Use the diagram at the right to prove the following theorem:  
 "If the diagonals of a quadrilateral bisect each other, then the quadrilateral is a parallelogram."

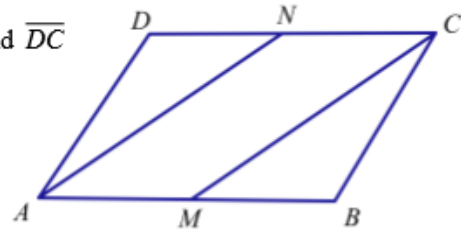


**Given:**

**Prove:**

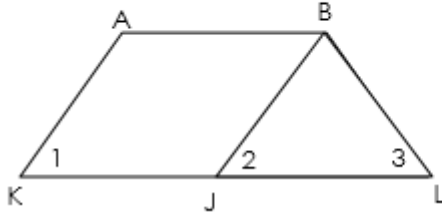
Statements	Reasons
1.	1.
2. M is the midpoint of _____; M is the midpoint of _____	2. Def. of segment bisector
3.	3. Def. of midpoint
4. $\angle AMB \cong \angle CMD$ ; $\angle$ _____ $\cong \angle$ _____	4.
5. $\triangle AMB \cong \triangle$ _____; $\triangle$ _____ $\cong \triangle$ _____	5.
6.	6. CPCTC
7. ABCD is a parallelogram	7. If both pairs of opp. sides of a quad. are $\cong$ , then the quad. is a parallelogram

2. **Given:** Parallelogram ABCD; M and N are midpoints of  $\overline{AB}$  and  $\overline{DC}$   
**Prove:** AMCN is a parallelogram

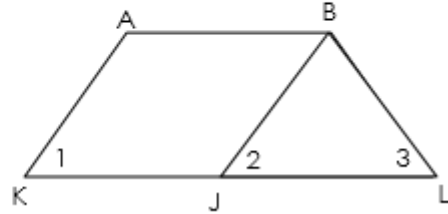


Statements	Reasons
1.	1.
2. $\overline{AB} \parallel \overline{DC}$ (so $\overline{AM} \parallel \overline{NC}$ )	2.
3. $\overline{AB} \cong \overline{DC}$ , or $AB = DC$	3.
4. $\frac{1}{2}AB = \frac{1}{2}DC$	4.
5. $AM = \frac{1}{2}AB$ ; $NC = \frac{1}{2}DC$	5.
6. $AM = NC$ , or $\overline{AM} \cong \overline{NC}$	6.
7.	7.

7. Given:  $\angle 1 \cong \angle 2$ ;  $\angle 2 \cong \angle 3$ ;  
 $\overline{AK} \cong \overline{BL}$   
 Prove:  $ABJK$  is a parallelogram



8. Given:  $\overline{AK} \cong \overline{BJ}$ ;  $\overline{BJ} \cong \overline{BL}$ ;  
 $\angle 1 \cong \angle 3$   
 Prove:  $ABJK$  is a parallelogram



**Section 3: Coordinate Geometry**

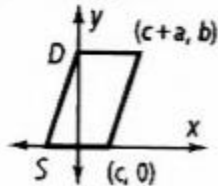
**Graph the given points on graph paper. Use slope and the Distance Formula to determine the most precise name for quadrilateral  $ABCD$ .**

4.  $A(3, 5)$ ,  $B(6, 5)$ ,  $C(2, 1)$ ,  $D(1, 3)$

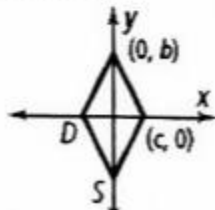
5.  $A(-1, 1)$ ,  $B(3, -1)$ ,  $C(-1, -3)$ ,  $D(-5, -1)$

**Give coordinates for points  $D$  and  $S$  without using any new variables.**

6. parallelogram



7. rhombus



8. isosceles trapezoid

