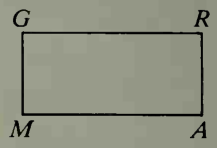
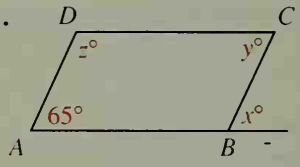
Classroom Exercises

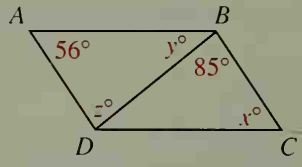
1. Quad. *GRAM* is a parallelogram.
   a. Why is $\angle G$ supplementary to $\angle M$?
   b. Why is $\angle M$ supplementary to $\angle A$?
   c. Complete: Consecutive angles of a parallelogram are ___?___, while opposite angles are ___?___.

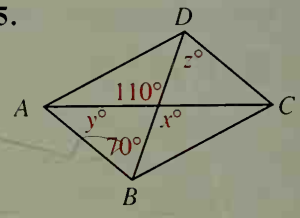


2. Suppose that $\angle M$ is a right angle. What can you deduce about angles G, R, and A?

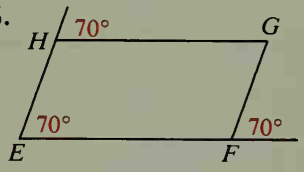
In Exercises 3–5 quad. *ABCD* is a parallelogram. Find the values of x, y, and z.

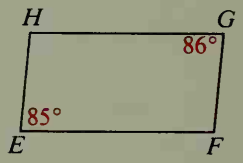
3. 

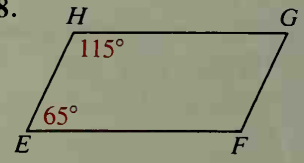
4. 

5. 

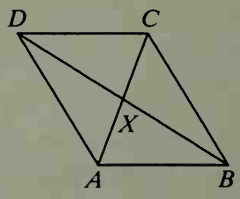
Must quad. *EFGH* be a parallelogram? Can it be a parallelogram? Explain.

6. 

7. 

8. 

Quad. *ABCD* is a parallelogram. Name the principal theorem or definition that justifies the statement.



9. $\overline{AD} \parallel \overline{BC}$
10. $\angle ADX \cong \angle CBX$
11. $m\angle ABC = m\angle CDA$
12. $\overline{AD} \cong \overline{BC}$
13. $AX = \frac{1}{2}AC$
14. $DX = BX$

15. Draw a quadrilateral that isn't a parallelogram but does have two 60° angles opposite each other.
16. State each theorem in if-then form. (Begin "If a quadrilateral is a ....")
    a. Theorem 5-1 b. Theorem 5-2 c. Theorem 5-3
17. a. Draw any two segments, $\overline{AC}$ and $\overline{BD}$, that bisect each other at O. What appears to be true of quad. *ABCD*?
    b. This exercise investigates the converse of what theorem?
18. Draw two segments that are both parallel and congruent. Connect their endpoints to form a quadrilateral. What appears to be true of the quadrilateral?