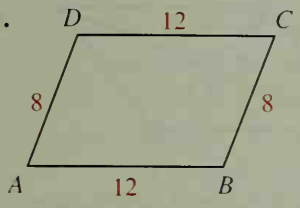
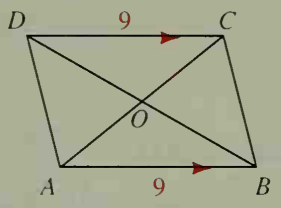
Classroom Exercises

Study the markings on each figure and decide whether *ABCD must* be a parallelogram. If the answer is *yes*, state the definition or theorem that applies.

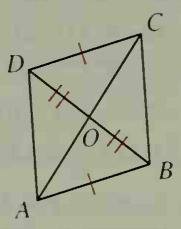
1.



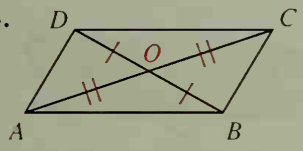
2.



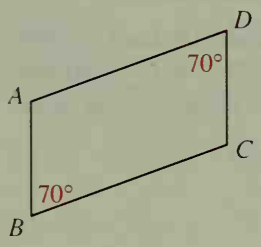
3.



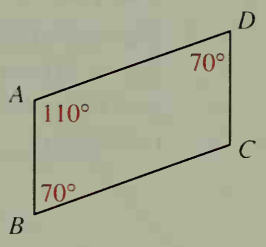
4.



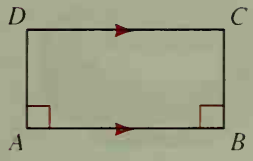
5.



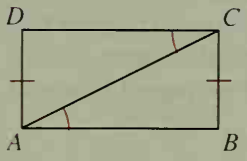
6.



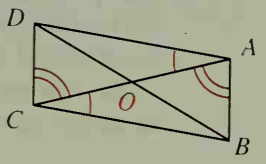
7.



8.



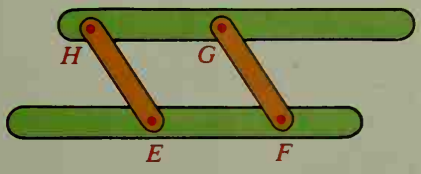
9.



10. Draw a quadrilateral that has two pairs of congruent sides but that is *not* a parallelogram.

11. Draw a quadrilateral that is *not* a parallelogram but that has one pair of congruent sides and one pair of parallel sides.

12. *Parallel rulers*, used to draw parallel lines, are constructed so that $EF = HG$ and $HE = GF$. Since there are hinges at points E, F, G, and H, you can vary the distance between $\overleftrightarrow{HG}$ and $\overleftrightarrow{EF}$. Explain why $\overleftrightarrow{HG}$ and $\overleftrightarrow{EF}$ are always parallel.



13. The pliers shown are made in such a way that the jaws are always parallel. Explain.