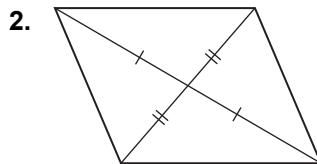
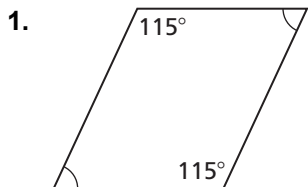


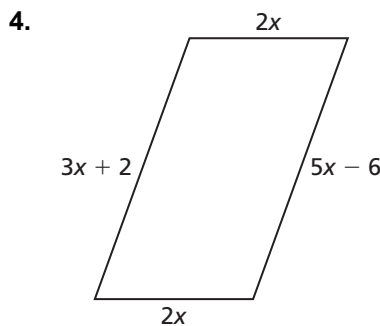
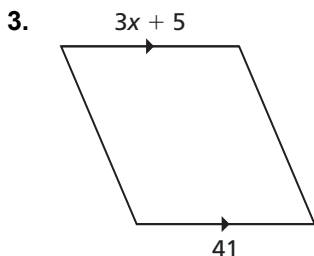
7.3

Practice A

In Exercises 1 and 2, state which theorem you can use to show that the quadrilateral is a parallelogram.



In Exercises 3 and 4, find the value of x that makes the quadrilateral a parallelogram.

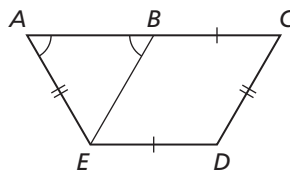


In Exercises 5 and 6, graph the quadrilateral with the given vertices in a coordinate plane. Then show that the quadrilateral is a parallelogram.

5. $A(-4, -2), B(-2, 1), C(4, 1), D(2, -2)$ 6. $E(-4, 1), F(-1, 5), G(11, 0), H(8, -4)$

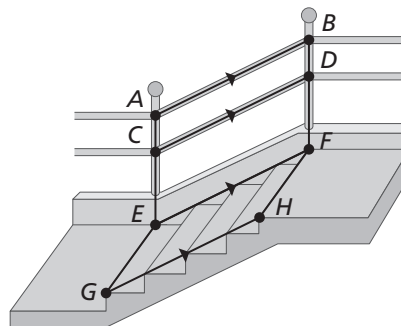
7. Use the diagram to write a two-column proof.

Given: $\angle A \cong \angle ABE$
 $\overline{AE} \cong \overline{CD}, \overline{BC} \cong \overline{DE}$



Prove: $BCDE$ is a parallelogram.

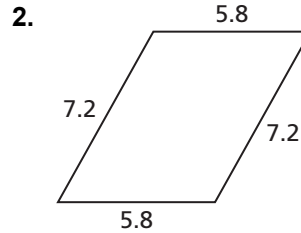
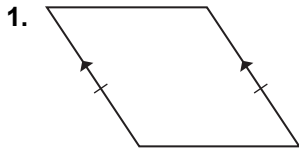
8. In the diagram of the handrail for a staircase shown, $m\angle A = 145^\circ$ and $\overline{AB} \cong \overline{CD}$.
- Explain how to show that $ABDC$ is a parallelogram.
 - Describe how to prove that $CDFE$ is a parallelogram.
 - Can you prove that $EFHG$ is a parallelogram? Explain.
 - Find $m\angle ACD, m\angle DCE, m\angle CEF,$ and $m\angle EFD$.



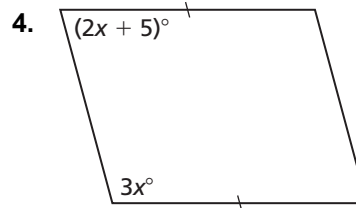
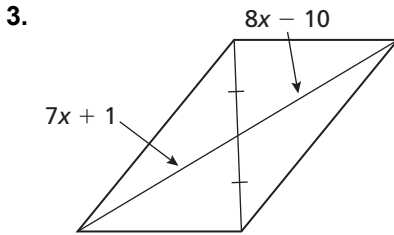
7.3

Practice B

In Exercises 1 and 2, state which theorem you can use to show that the quadrilateral is a parallelogram.



In Exercises 3 and 4, find the value of x that makes the quadrilateral a parallelogram.

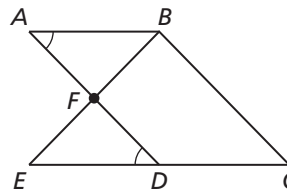


In Exercises 5 and 6, graph the quadrilateral with the given vertices in a coordinate plane. Then show that the quadrilateral is a parallelogram.

5. $W(-3, -1), X(-3, 4), Y(3, 2), Z(3, -3)$ 6. $A(-4, 0), B(2, 2), C(5, -1), D(-1, -3)$

7. Use the diagram to write a two-column proof.

- Given:** $\angle A \cong \angle FDE$
 F is the midpoint of \overline{AD} .
 D is the midpoint of \overline{CE} .



Prove: $ABCD$ is a parallelogram.

8. A quadrilateral has two pairs of congruent angles. Can you determine whether the quadrilateral is a parallelogram? Explain your reasoning.

9. An octagon star is shown in the figure on the right.

- a. Find $m\angle FCG$, $m\angle BCF$, and $m\angle D$.
- b. State which theorem you can use to show that the quadrilateral is a parallelogram.
- c. The length of \overline{AB} is three times the length of \overline{AD} . Write an expression for the perimeter of parallelogram $ABCD$ in terms of the variable x .

