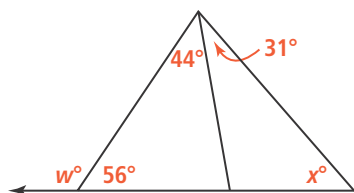




UNDERSTAND

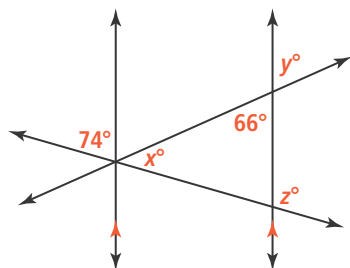
10. **Construct Arguments** Write a proof for Theorem 2-10.
11. **Higher Order Thinking** Marisol claims that each pair of remote interior angles in a triangle has two exterior angles. Do you agree? Use a diagram to support your answer.
12. **Error Analysis** A student was asked to find the value of x . What error did the student make?



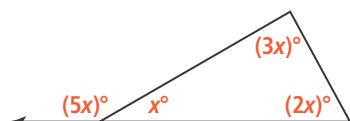
By the Linear Pairs Theorem,
 $w + 56 = 180$, so $w = 124$.
By the Triangle Exterior Angle
Theorem, $w = x + 31$, or
 $124 = x + 31$, so $x = 93$.

X

13. **Reason** Prove the Triangle Exterior Angle Theorem.
14. **Mathematical Connections** What are the values of x , y , and z ? Use theorems to justify each answer.



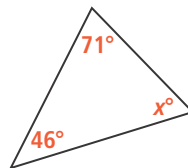
15. **Use Structure** Write and solve an equation to find the value of x . What is the measure of each labeled angle?



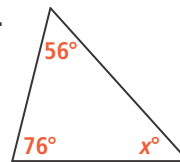
PRACTICE

What are the values of the variables in each figure? SEE EXAMPLES 1–3

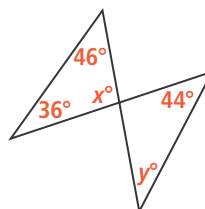
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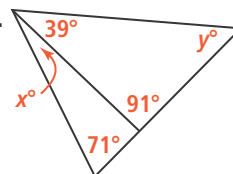
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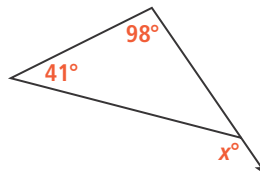


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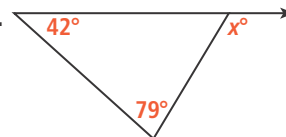


What is the value of x in each figure? SEE EXAMPLE 4

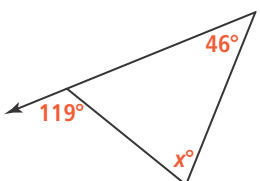
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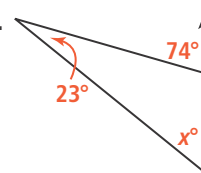
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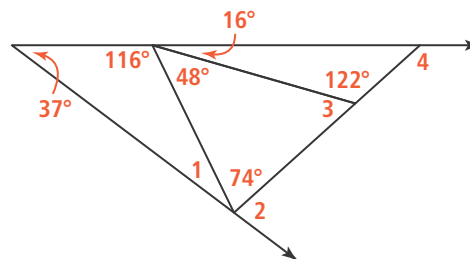
22.



23.



For Exercises 24–27, find the measure of each angle. SEE EXAMPLE 4



24. $\angle 1$

25. $\angle 2$

26. $\angle 3$

27. $\angle 4$

28. A pennant is in the shape of an isosceles triangle. One leg of the triangle is fastened to a stick. The stick forms an 84° angle with the other leg. What is the measure of each remote interior angle in the triangle?

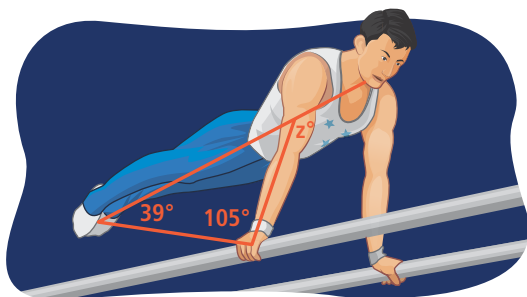


APPLY

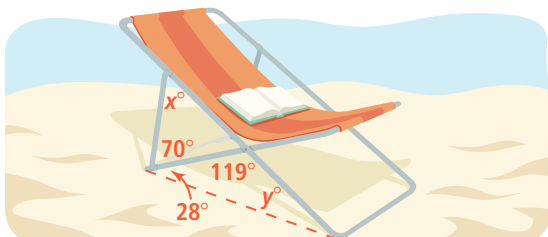
29. **Model With Mathematics** Pilar is making a replacement set of sails for a sailboat.



- What equation can Pilar use that relates the values of w and x ?
 - What equation can Pilar use that relates the values of y and z ?
30. **Reason** An artist painting from a photo begins with a geometric sketch to match angle measures. What is the value of z ?



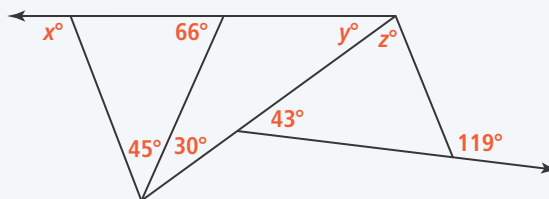
31. **Look for Relationships** Use the figure shown.



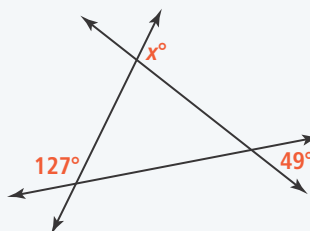
- What is the value of x ?
- What is the value of y ?
- The chair can lay farther back so that the 70° angle changes to 86° and x° changes to 36° . How does this affect the 119° angle?

ASSESSMENT PRACTICE

32. What are the values of x , y , and z ?



33. **SAT/ACT** What is the value of x ?



- (A) 98 (C) 102
 (B) 106 (D) 176

34. **Performance Task** A tablet case is supported at the back. The measure of the slant angle of the tablet can be changed, but $m\angle 2 = m\angle 3$ for any slant that is chosen.



Part A A user adjusts the case so that $m\angle 2 = 42$. What are the measures of the other angles?

Part B Is it possible to slant the tablet case so that $m\angle 1 = m\angle 5$? If so, explain how. If not, explain why it is not possible.

Part C A user wants to slant the tablet case so that $m\angle 1 = 2(m\angle 5)$. What should the measure of each of the five angles be?