PRACTICE & PROBLEM SOLVING

Scan for Multimedia

Practice Tutorial

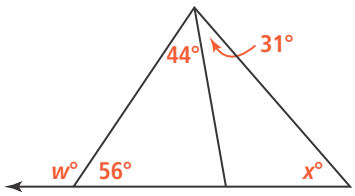
Additional Exercises Available Online

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.

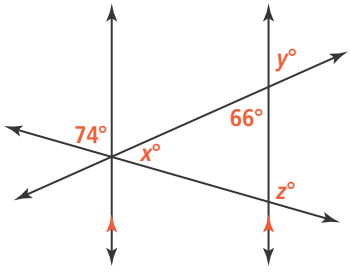
12. Error Analysis A student was asked to find the value of x. What error did the student make?



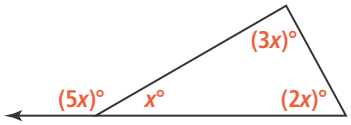
> By the Linear Pairs Theorem, $w + 56 = 180$, so $w = 124$. By the Triangle Exterior Angle Theorem, $w = x + 31$, or $124 = x + 31$, so $x = 93$. ✗

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.



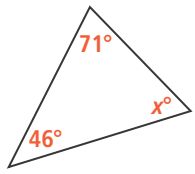
15. Use Structure Write and solve an equation to find the value of x. What is the measure of each labeled angle?



PRACTICE

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

16.



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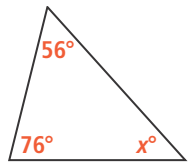

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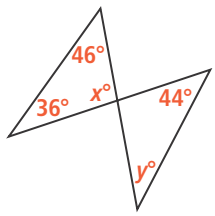

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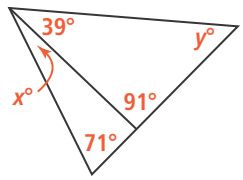
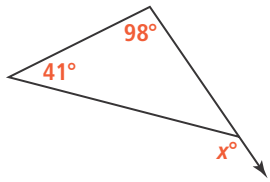


What is the value of x in each figure? SEE EXAMPLE 4

20.



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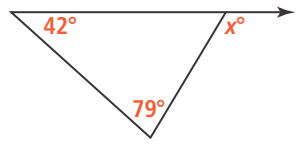

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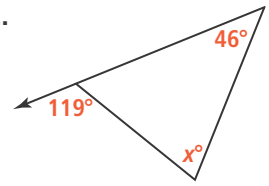

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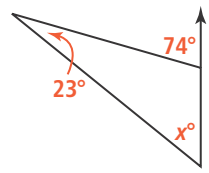
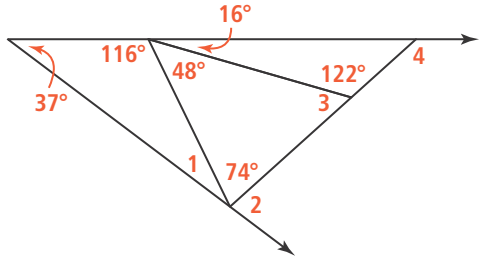


For Exercises 24–27, find the measure of each angle. SEE EXAMPLE 4



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?

PRACTICE & PROBLEM SOLVING

Practice Tutorial
Mixed Review Available Online

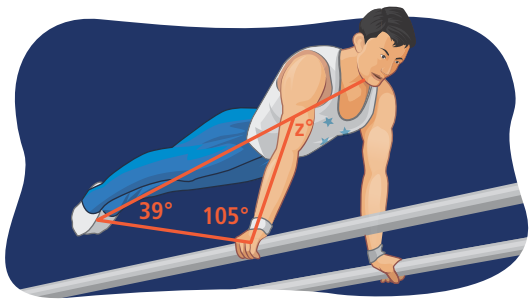
APPLY

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

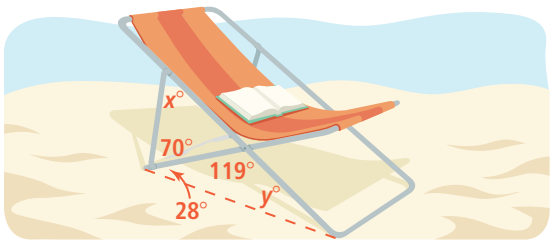
a. What equation can Pilar use that relates the values of w and x?

b. 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.



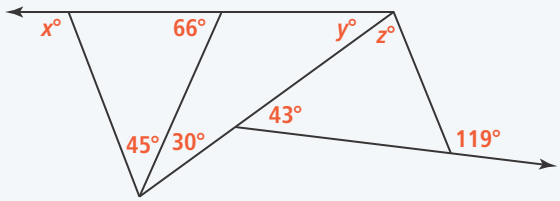
a. What is the value of x?

b. What is the value of y?

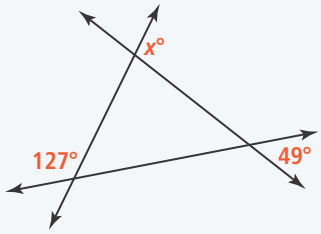
c. The chair can lay farther back so that the 70° angle changes to 86° and x° changes to 36°. How does this affect the 119° angle?

ASSESSMENT PRACTICE

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



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



Ⓐ 98 Ⓒ 102

Ⓑ 106 Ⓓ 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?