

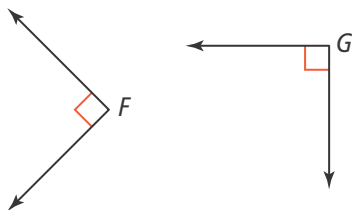


UNDERSTAND

9. **Construct Arguments** Fill in the missing reasons for the proof of Theorem 1-4.

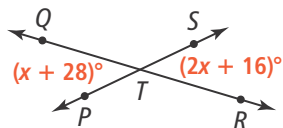
Given: $\angle F$ and $\angle G$
are right
angles.

Prove: $\angle F \cong \angle G$

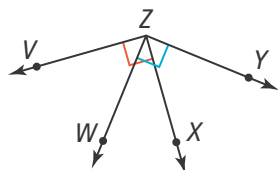


Statements	Reasons
1) $\angle F$ and $\angle G$ are right angles	1) Given
2) $m\angle F = 90$ and $m\angle G = 90$	2)
3) $m\angle F = m\angle G$	3)
4) $\angle F \cong \angle G$	4)

10. **Error Analysis** A student uses the Vertical Angles Theorem and the definition of complementary angles to conclude $m\angle PTR = 50$ in the figure. What mistake did the student make?

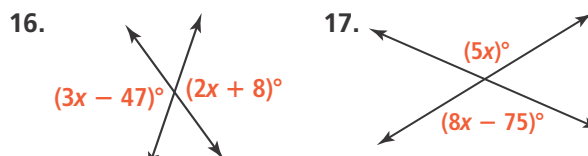
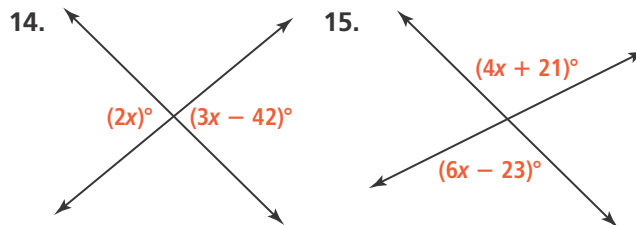


11. **Construct Arguments** Write a paragraph proof of Theorem 1-5. Given that $\angle N$ and $\angle M$ are congruent and supplementary, prove that $\angle N$ and $\angle M$ are right angles.
12. **Construct Arguments** Write a two-column proof of Theorem 1-6. Given that $\angle ABC$ and $\angle CBD$ are a linear pair, prove that $\angle ABC$ and $\angle CBD$ are supplementary.
13. **Higher Order Thinking** Explain how the Congruent Complements Theorem applies to the figure shown.



PRACTICE

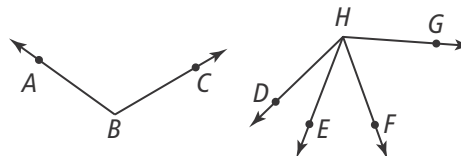
Find the value of each variable and the measure of each labeled angle. SEE EXAMPLES 1 AND 2



18. Write a paragraph proof. SEE EXAMPLE 3

Given: $m\angle ABC = 114$; $m\angle DHE = 25$;
 $m\angle EHF = 41$; $\angle ABC$ and $\angle GHF$ are
supplementary.

Prove: $\angle DHF \cong \angle GHF$



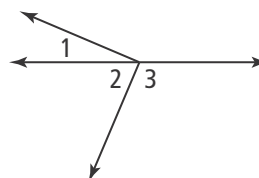
Write a two-column proof for each statement.

SEE EXAMPLE 4

19. **Given:** $\angle 1$ and $\angle 2$ are complementary.

$$m\angle 1 = 23$$

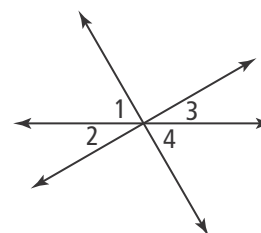
Prove: $m\angle 3 = 113$



20. **Given:** $m\angle 2 = 30$

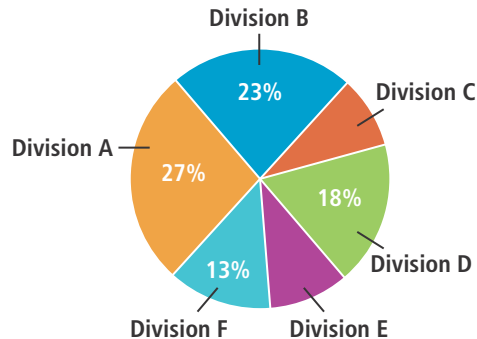
$$m\angle 1 = 2m\angle 2$$

Prove: $m\angle 3 + m\angle 4 = 90$

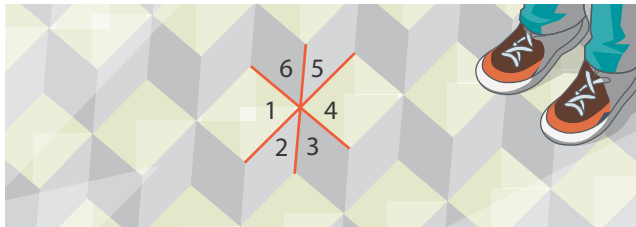


APPLY

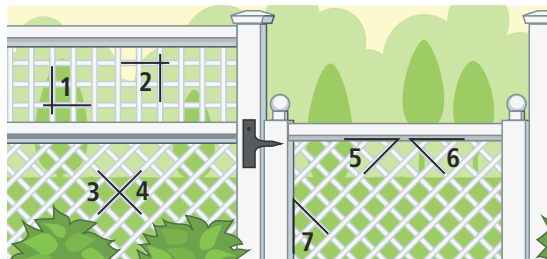
21. **Mathematical Connections** The graph shows percentages of sales made by various divisions of a company in one year. What are the angles formed by the segments for each division? What are the missing percentages? Explain how you were able to determine each percentage.



22. **Use Structure** A type of floor tiling is designed to give the illusion of a three-dimensional figure. Given that $m\angle 1 = 85$ and $m\angle 3 = 45$, what are the measures of the remaining angles?

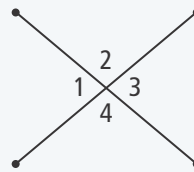


23. **Reason** Consider the angles formed by the garden gate. Using theorems from this lesson, what can you conclude from each of the following statements? State which theorem you applied to reach your conclusion.
- $m\angle 1 = 90$ and $m\angle 2 = 90$.
 - $\angle 3$ and $\angle 4$ are vertical angles.



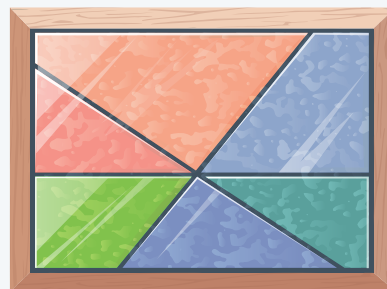
ASSESSMENT PRACTICE

24. Consider the figure shown.



Classify each of the following statements as *always true*, *sometimes true*, or *never true*.

- $m\angle 1 + m\angle 4 = 180$
 - $m\angle 1 + m\angle 2 + m\angle 3 = 180$
 - $m\angle 2 + m\angle 4 = 180$
 - $\angle 2 \cong \angle 3$
 - $\angle 2 \cong \angle 4$
 - $m\angle 3 = m\angle 4$
25. **SAT/ACT** Given $\angle ABC$ and $\angle DEF$ are supplementary and $\angle ABC$ and $\angle GHJ$ are supplementary, what can you conclude about the angles?
- $m\angle DEF = m\angle GHJ$
 - $m\angle DEF + m\angle GHJ = 90$
 - $m\angle DEF + m\angle GHJ = 180$
 - $m\angle ABC = m\angle DEF$ and $m\angle ABC = m\angle GHJ$
26. **Performance Task** The figure shows lines that divide a designer window into different parts.



Part A Copy the figure onto a sheet of paper. Label each of the inner angles. Use a protractor to measure any two of the inner angles in the figure. Using your measurements, determine the measurements of the other angles.

Part B Choose two of the inner angles that you did not actually measure. How do you know the angle measures for these two angles? Write a two-column proof to show how you know their measures are correct.