

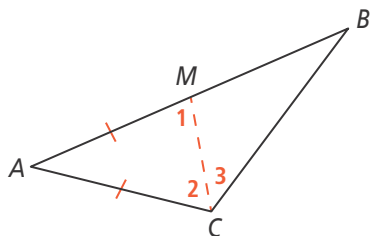


UNDERSTAND

13. **Construct Arguments** Fill in the missing reasons in the proof of Theorem 5-9. (Hint: The Comparison Property of Inequality states that if $a = b + c$ and $c > 0$, then $a > b$.)

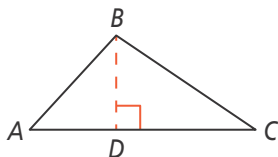
Given: $AB > AC$, $\overline{AC} \cong \overline{AM}$

Prove: $m\angle ACB > m\angle B$

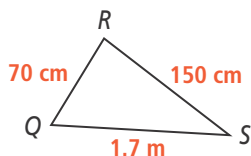


Statements	Reasons
1) $\overline{AC} \cong \overline{AM}$	1) Given
2) $m\angle 1 = m\angle 2$	2) Isosc. Triangle Thm.
3) $m\angle ACB = m\angle 2 + m\angle 3$	3)
4) $m\angle ACB > m\angle 2$	4)
5) $m\angle ACB > m\angle 1$	5)
6) $m\angle 1 = m\angle B + m\angle 3$	6) Ext. Angles Thm.
7) $m\angle 1 > m\angle B$	7)
8) $m\angle ACB > m\angle B$	8)

14. **Construct Arguments** Write a paragraph proof for Theorem 5-11. Use the figure shown and prove that $AB + CB > AC$.

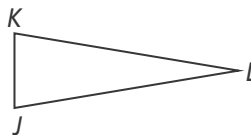


15. **Error Analysis** A student said that a triangle with side lengths of 3 ft and 4 ft could have a third side with a length of 7 ft. Explain why the student is incorrect. What is a correct statement about the third side of the triangle?
16. **Error Analysis** Tia says that $\angle Q$ must be the largest angle in $\triangle QRS$ because $150 > 70 > 1.7$. Explain Tia's error.

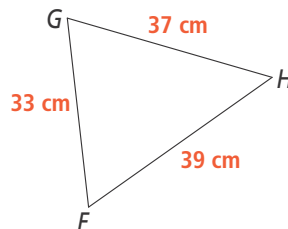


PRACTICE

17. Which angle measure appears to be the smallest in $\triangle JKL$? What can you conclude about the side opposite that angle? SEE EXAMPLE 1.



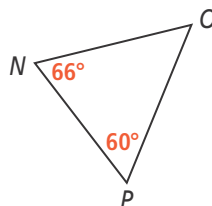
Identify the angles of $\triangle FGH$. SEE EXAMPLE 2.



18. Which angle is the smallest?

19. Which angle is the largest?

Identify the sides of $\triangle NOP$. SEE EXAMPLES 3 AND 4.



20. Which side is the longest?

21. Which side is the shortest?

Determine whether the side lengths could form a triangle. SEE EXAMPLE 5.

22. 13, 15, 9

23. 8, 15, 7

24. 35, 20, 11

25. 65, 32, 40

Given two sides of a triangle, determine the range of possible lengths of the third side. SEE EXAMPLE 5.

26. 10 in. and 12 in.

27. 5 ft and 10 ft

28. 200 m and 300 m

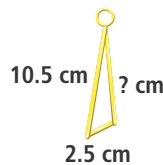
29. 90 km and 150 km

APPLY

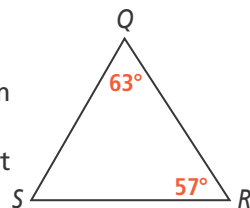
30. **Make Sense and Persevere** It took Ines 2 hours to bicycle the perimeter shown at a constant speed of 10 miles per hour. Which two roads form the largest angle?



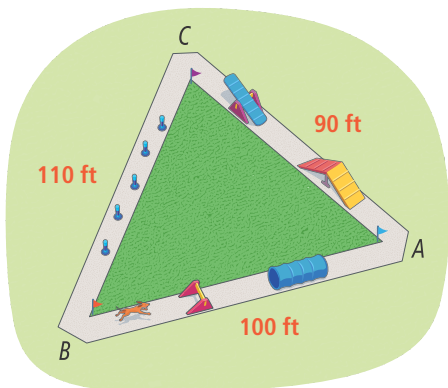
31. **Reason** A jewelry designer plans to make a triangular pendant out of gold wire. The wire costs \$31.65 per centimeter. What is the possible range of costs for the wire?



32. **Use Structure** A stage manager must use tape to outline a triangular platform on the set. Order the sides of the platform from longest to shortest.



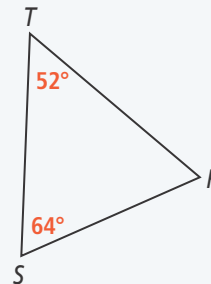
33. **Make Sense and Persevere** A dog running an agility course has difficulty making turns. The sharper the angle, the more difficult the turn. Which corner is most difficult for her to turn?



ASSESSMENT PRACTICE

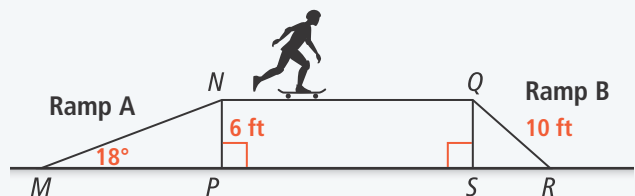
34. The lengths of two sides of a triangle are 13 and 20. What is the range of values for the length x of the third side?

35. **SAT/ACT** Look at $\triangle RST$.



Which statement is false?

- (A) $TS = TR$
 - (B) $m\angle STR < m\angle TRS$
 - (C) $TR > SR$
 - (D) $TS < SR$
 - (E) $TS + TR > SR$
36. **Performance Task** Teo designed a skateboard ramp.



Part A List the sides of ramp A in order from shortest to longest.

Part B List the angles of ramp B from smallest to largest, and explain how you know.

Part C Ramp B cannot be steeper than 45° . Is it possible to build ramp B so that $\overline{SR}$ is shorter than 6 ft? Explain.