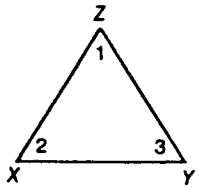
Inequalities in Triangles

The figures in these exercises are not drawn to scale. When solving a problem, use only the information given about the measures of angles and lengths of segments.

Complete the following statements about $\triangle XYZ$.



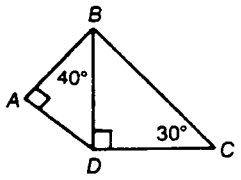
Exs. 1–5

1. If $m\angle 1 = 65$ and $m\angle 2 = 40$, the longest side is _____.
2. If $XZ = XY$ and $m\angle 2 = 70$, the longest side is _____.
3. If $m\angle 1 = 90$, the longest side is _____.
4. If $XZ = 7$, $XY = 9$, and $ZY = 11$, the largest angle is _____.
5. If $\overline{XZ} \cong \overline{ZY}$ and $m\angle 3 = 40$, the largest angle is _____.

Is it possible for a triangle to have sides with the lengths indicated?

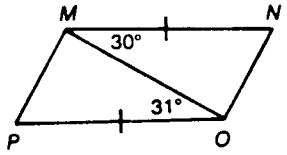
6. 13, 15, 20 _____
7. 6, 6, 11 _____
8. 4, 9, 13 _____

Exercises 9 and 10 refer to the figure at the right.

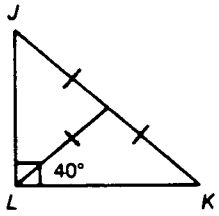


9. Name the shortest segment. _____
10. Name the longest segment. _____

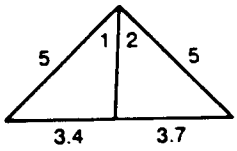
11. Which is longer, $\overline{MP}$ or $\overline{NO}$? _____



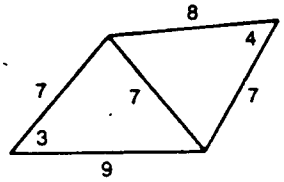
12. Which is longer, $\overline{JL}$ or $\overline{LK}$? _____



13. Which is larger, $\angle 1$ or $\angle 2$? _____



14. Which is larger, $\angle 3$ or $\angle 4$? _____



15. Two sides of a triangle have lengths 4 inches and 6 inches. The third side would have to be greater than _____ and less than _____.