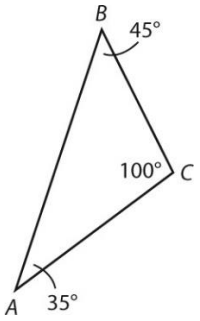
Geometry Module 7.3

Determine if it is possible for a triangle to have the given side lengths.

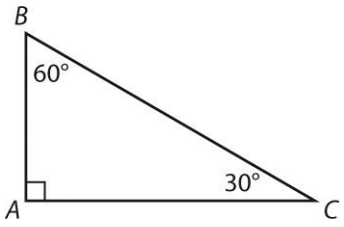
1. 8, 4, 7 _____
2. 1, 3, 2 _____
3. 6, 4, 3 _____
4. 18, 12, 9 _____

For the given triangles, write the side lengths from longest so shortest.

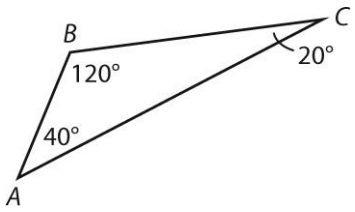
5. _____



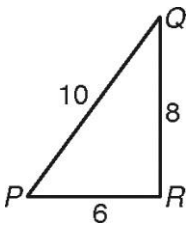
6. _____



7. _____



8. For ΔPQR, write the angles in order from smallest to largest.
   ∠ _____ ∠ _____ ∠ _____



Use your knowledge of triangle inequalities to solve problems 8–13.

9. Can you make a triangle with a 6-inch stick, a 3-inch stick, and a 1-inch stick? ____ **Make a sketch** to show what happens if you try.

10. To make a triangle with a 5-inch stick and a 4-inch stick, the third side must be greater than ____ in. and less than ____ in.

11. For an isosceles triangle with congruent sides of length *s*, what is the range of lengths for the base, *b*? What is the range of angle measures, *A*, for the angle opposite the base? **Sketch two different possibilities** for the isosceles triangle. Complete the inequalities and explain your answers.

    ____ < *b* < _____ ____ < *A* < _____ _____

12. Aaron, Brandon, and Clara sit in class so that they are at the vertices of a triangle. It is 15 feet from Aaron to Brandon, and it is 8 feet from Brandon to Clara. Give the range of possible distances, *d*, from Aaron to Clara.

    _____

13. If two sides of a triangle stay the same length and the angle between them increases, what happens to the length of the third side?

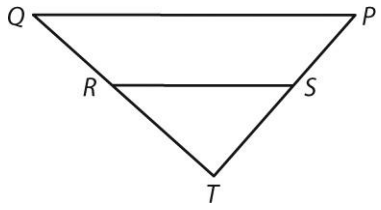
    _____

14. Explain why you cannot make a triangle if one side is longer than the other two sides put together.

    _____

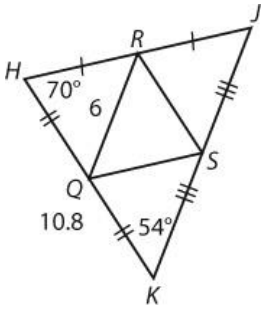
Geometry Module 8.4

In the figure, R and S are the midpoints of $\overline{QT}$ and $\overline{PT}$.



1. $\overline{RS}$ is parallel to _____.
2. If $QP = 16$, then $RS =$ _____.
3. If $RS = 9$, then $QP =$ _____.

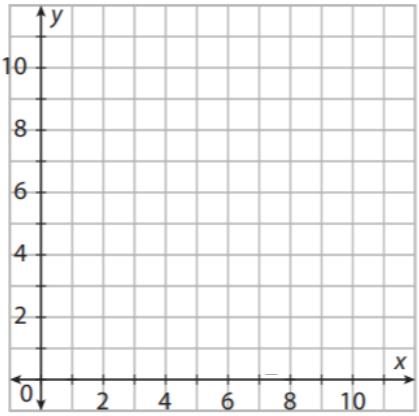
Use the figure at the right for Problems 4–9



4. Name the midsegments of the triangle. _____
5. Find m∠*JSR*. _____ because _____.
6. Find m∠*HRQ*. _____ because _____.
7. Find *RS*. _____ because _____.
8. Find *JK*. _____ because _____.
9. What two segments are congruent to $\overline{SQ}$? _____

10. **Show work** The vertices of $\triangle XYZ$ are $X(3, 7)$, $Y(9, 11)$, and $Z(7, 1)$. U is the midpoint of $\overline{XY}$, and W is the midpoint of $\overline{XZ}$. Show that $\overline{UW} \parallel \overline{YZ}$ and $UW = \frac{1}{2}YZ$. Sketch $\triangle XYZ$ and $\overline{UW}$.

1. Draw the triangle. 2. Find and draw the midpoints U and W. 3. Find the slope of UW and YZ to show they are parallel. 4. Find the length or distance of UW and YZ to show $UW = \frac{1}{2}\ YZ$.



11. The angle measures of a triangle are *a*, 3*a*, and 5*a*. Tell the measure of each angle.

_____°, _____°, _____°

12. You know that one of the exterior angles of an isosceles triangle is 140°. The angle measures of the triangle could be _____°-_____°-_____° or _____°-_____°-_____°.

13. A city park will be shaped like a right triangle, and there will be two pathways for pedestrians, shown by $\overline{VT}$ and $\overline{VW}$ in the diagram. The park planner only wrote two lengths on his sketch as shown. Based on the diagram, what will be the lengths of the two pathways? **Show all work.**