Geometry 8.2 *(updated. 9/30/14)*

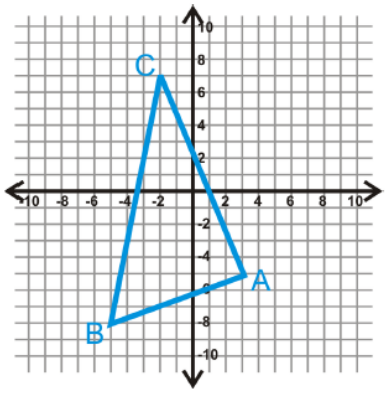
1.

   a. $c = 15$
   b. $12 < c < 5$
   c. $15 < c < 21$

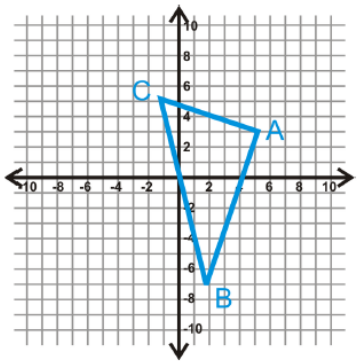
2.

   a. $a = 7$
   b. $7 < a < 24$
   c. $1 < c < 7$

3. It is a right triangle because 8, 15, 17 is a Pythagorean triple. The "x" indicates that this set is a multiple of 8, 15, 17.
4. right
5. no
6. right
7. acute
8. right
9. obtuse
10. right
11. acute
12. acute
13. right
14. obtuse
15. obtuse
16. acute



17. obtuse



18. One way is to use the distance formula to find the distances of all three sides and then use the converse of the Pythagorean Theorem. The second way would be to find the slope of all three sides and determine if two sides are perpendicular.
19. $c = 13$
20. $d = \sqrt{194}$
21. The sides of $\triangle ABC$ are a multiple of 3, 4, 5 which is a right triangle. $\angle A$ is opposite the largest side, which is the hypotenuse, making it 90°.
22. See the following table:

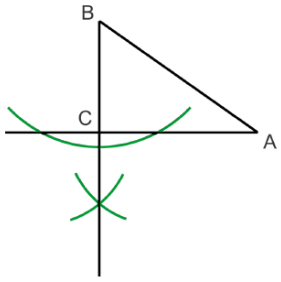
TABLE 8.1:

Statement	*Reason*
1. In $\triangle ABC, a^2 + b^2 < c^2$, and c is the longest side. In $\triangle LMN$, $\angle N$ is a right angle.	Given
2. $a^2 + b^2 = h^2$	Pythagorean Theorem
3. $c^2 > h^2$	Transitive PoE
4. $c > h$	Take the square root of both sides
5. $\angle C$ is the largest angle in $\triangle ABC$.	The largest angle is opposite the longest side.
6. $m\angle N = 90°$	Definition of a right angle
7. $m\angle C > m\angle N$	SSS Inequality Theorem
8. $m\angle C > 90°$	Transitive PoE
9. $\angle C$ is an obtuse angle.	Definition of an obtuse angle.
10. $\triangle ABC$ is an obtuse triangle.	Definition of an obtuse triangle.

23. right
24. obtuse
25. acute
26. (1, 5), (-2, -3)

27 and 28. answers vary, you can check your answer by plotting the points on graph paper and measuring with a protractor or using the distance formula to verify the appropriate inequality.

29 and 30. While your diagram may be different because your angle at A may be different, the construction should look something like this:



31. The sum of the angles in a triangle must be 180°, if $\angle C$ is 90°, then both $\angle A$ and $\angle B$ are acute.
32. You could construct a line perpendicular to $\overline{AB}$ through $\angle B$ (you will need to extend the segment beyond B to do the construction). Next, select any point on this perpendicular segment and call it C. By connecting A and C you will make $\triangle ABC$.