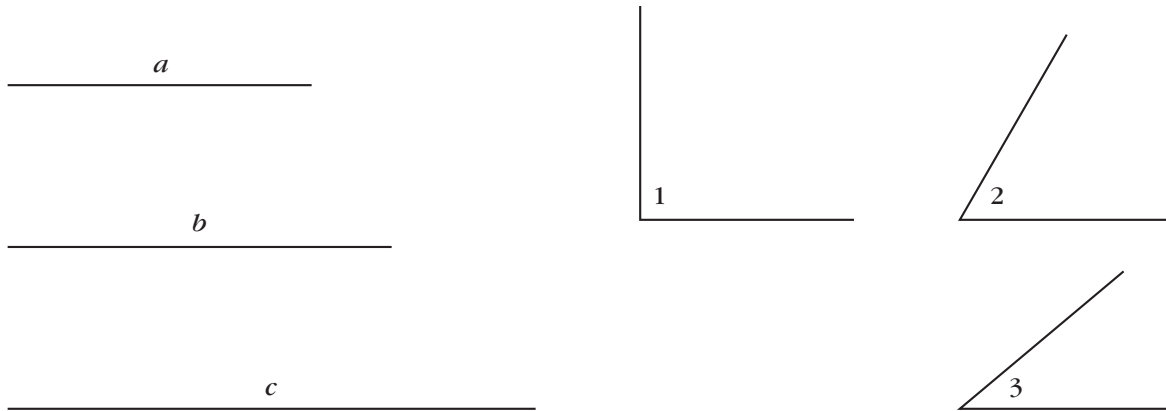


LAB 6.1

Noncongruent Triangles

Name(s) _____

■ **Equipment:** Compass, straightedge, unlined paper



Instructions: For the following problems,

- a. Use the compass and straightedge to construct *two noncongruent triangles* that satisfy the given conditions.
 - b. Label the sides and angles that are equal to those shown above.
 - c. If you cannot construct two noncongruent triangles, explain why, and construct just one triangle.
 - d. If you cannot construct even one, explain why.
1. One side of length a and an adjacent angle equal to $\angle 3$
 2. One side of length a and an opposite angle equal to $\angle 3$
 3. One angle equal to $\angle 1$ and one equal to $\angle 2$
 4. One angle equal to $\angle 1$, one equal to $\angle 2$, and one equal to $\angle 3$
 5. One side of length a , one of length b , one of length c
 6. One side of length a , one of length b , and between them an angle equal to $\angle 3$
 7. One side of length a , one of length b , and an angle equal to $\angle 3$ opposite the first side
 8. One side of length a between angles equal to $\angle 2$ and $\angle 3$
 9. One side of length a adjacent to an angle equal to $\angle 2$ and opposite an angle equal to $\angle 3$
 10. One side of length a , one of length b , one of length c , and an angle equal to $\angle 1$

LAB 6.1

Name(s) _____

Noncongruent Triangles (continued)

Discussion

- A. Problem 1 could be described as an SA construction (one pair of equal sides and one pair of equal angles). Problem 6 could be described as an SAS construction (two pairs of equal sides with one pair of equal angles between them). Problem 7 could be described as an SSA construction (two pairs of equal sides with one pair of equal angles not between them). Make a two-column table to summarize your work in Problems 1–10.
- In column 1, describe the problem using the letters S and A; each S represents a pair of equal sides, and each A represents a pair of equal angles.
 - In column 2, explain whether the given conditions lead to many possible triangles, two possible triangles, one possible triangle, or no triangles.
- B. Which problems had no solution? Why?
- C. Which problems had a unique solution? How can this help us recognize congruent triangles?
- D. Which problem had exactly two solutions?