When you draw a diagram, try to make it reasonably accurate, avoiding special cases that might mislead. For example, when a theorem refers to an angle, don't draw a *right* angle.

Before you write the steps in a two-column proof you will need to plan your proof. Sometimes you will read the statement of a theorem and see immediately how to prove it. Other times you may need to try several approaches before you find a plan that works.

If you don't see a method of proof immediately, try reasoning back from what you would like to prove. Think: "This conclusion will be true if _?_ is true. This, in turn, will be true if _?_ is true . . . ." Sometimes this procedure leads back to a given statement. If so, you have found a method of proof.

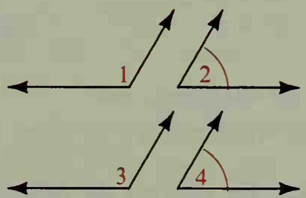
Studying the proofs of previous theorems may suggest methods to try. For example, the proof of the theorem that vertical angles are congruent suggests the proof of the following theorem.

Theorem 2-7

If two angles are supplements of congruent angles (or of the same angle), then the two angles are congruent.

Given: $\angle 1$ and $\angle 2$ are supplementary;
$\angle 3$ and $\angle 4$ are supplementary;
$\angle 2 \cong \angle 4$

Prove: $\angle 1 \cong \angle 3$



Proof:

Statements	Reasons
1. $\angle 1$ and $\angle 2$ are supplementary; $\angle 3$ and $\angle 4$ are supplementary.	1. Given
2. $m\angle 1 + m\angle 2 = 180$; $m\angle 3 + m\angle 4 = 180$	2. Def. of supp. $\angle$s
3. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	3. Substitution Prop.
4. $\angle 2 \cong \angle 4$, or $m\angle 2 = m\angle 4$	4. Given
5. $m\angle 1 = m\angle 3$, or $\angle 1 \cong \angle 3$	5. Subtraction Prop. of =

The proof of the following theorem is left as Exercise 18.

Theorem 2-8

If two angles are complements of congruent angles (or of the same angle), then the two angles are congruent.