

For each statement in Exercises 5–10 copy and complete a table like the one shown below.

If ?, then ? True/False

Statement	?	?
Contrapositive	?	?
Converse	?	?
Inverse	?	?

5. If I live in Los Angeles, then I live in California.
6. If  $\angle 1$  and  $\angle 2$  are vertical angles, then  $m\angle 1 = m\angle 2$ .
7. If  $AM = MB$ , then  $M$  is the midpoint of  $\overline{AB}$ .
8. If a triangle is scalene, then it has no congruent sides.
- B** 9. If  $-2n < 6$ , then  $n > -3$ .
10. If  $x^2 > 1$ , then  $x > 1$ .

Reword the given statement in if-then form and illustrate it with a Venn diagram. What can you conclude by using the given statement together with each additional statement? If no conclusion is possible, say so.

11. Given: All senators are at least 30 years old.
  - a. Jose Avila is 48 years old.
  - b. Rebecca Castelleo is a senator.
  - c. Constance Brown is not a senator.
  - d. Ling Chen is 29 years old.
12. Given: Math teachers assign hours of homework.
  - a. Bridget Sullivan is a math teacher.
  - b. August Campos assigns hours of homework.
  - c. Andrew Byrnes assigns no homework at all.
  - d. Jason Babler is not a math teacher.

What can you conclude by using the given statement together with each additional statement? If no conclusion is possible, say so.

13. Given: If it is not raining, then I am happy.
  - a. I am not happy.
  - b. It is not raining.
  - c. I am overjoyed.
  - d. It is raining.
14. Given: All my students love geometry.
  - a. Stu is my student.
  - b. Luis loves geometry.
  - c. Stella is not my student.
  - d. George does not love geometry.
15. Given: If two angles are vertical angles, then they are congruent.
  - a.  $\angle 1 \cong \angle 2$
  - b.  $m\angle ABC \neq m\angle DBF$
  - c.  $\angle 3$  and  $\angle 4$  are adjacent angles.
  - d.  $\overline{RS}$  and  $\overline{TU}$  intersect at  $V$ .