

# Practice 7

For use with Section 1-7

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For Exercises 1-7, do these things:

- a. Tell whether or not each statement is true. If not, give a counterexample.
  - b. Write the converse of each statement.
  - c. Tell whether or not the converse of each statement is true. If not, give a counterexample.
1. If you are fifteen years old, then you go to school.
  2. If  $x > 0$ , then  $x^2 > 0$ .
  3. If it's raining, then the sidewalk is wet.
  4. If  $a^2 = 25$ , then  $a = 5$ .
  5. If the diagonals of a quadrilateral are congruent, then the quadrilateral is a rectangle.
  6. If the Wolverines outscore their opponents, then they win the game.
  7. If  $ab = ac$ , then  $b = c$ .

For Exercises 8–10, tell whether each conclusion is valid. Write Yes or No. If not, give a counterexample.

8. If Claudio scores above 90 on his next math test, his average will be an A. Claudio has an A average after the test. Conclusion: He scored above 90.
9. If Mei Hua finishes her homework, she will take part in the New Year celebration. Mei Hua finishes her homework. Conclusion: She takes part in the celebration.
10. If Giang has a sore throat, she will stay home from school. Giang stays home from school. Conclusion: She has a sore throat.
11. Dwayne read in a book that one could use cricket chirps to estimate the temperature in degrees Celsius. The book gave the formula  $t = \frac{1}{5}n + 6$ , where  $t$  is the Celsius temperature and  $n$  is the number of chirps per minute. Dwayne solved the equation for  $n$  and got  $n = 5t - 30$ . He used this equation and predicted that for a temperature of  $100^\circ\text{C}$ , a cricket would chirp 470 times per minute. Do you agree with his prediction? Explain your thinking.