

Practice B

For use with pages 87–95

Using p and q below, write the symbolic statement in words. p : The value of x is 4. q : $3x + 2 = 14$

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|--------------------------------|----------------------|--------------------------------|
| 1. $\sim p$ | 2. $\sim q$ | 3. $q \rightarrow p$ |
| 4. $\sim q \rightarrow \sim p$ | 5. $p \rightarrow q$ | 6. $\sim p \rightarrow \sim q$ |

Determine if statement (3) follows from statements (1) and (2) by the Law of Detachment or the Law of Syllogism. If it does, state which law was used. If it does not, write invalid.

7. (1) If an angle measures more than 90° , then it is not acute.
 (2) $m\angle ABC = 120^\circ$
 (3) $\angle ABC$ is not acute.
8. (1) All 45° angles are congruent.
 (2) $\angle A \cong \angle B$
 (3) $\angle A$ and $\angle B$ are 45° angles.
9. (1) If you order the apple pie, then it will be served with ice cream.
 (2) Matthew ordered the apple pie.
 (3) Matthew was served ice cream.
10. (1) If you wear the school colors, then you have school spirit.
 (2) If you have school spirit, then the team feels great.
 (3) If you wear the school colors, then the team will feel great.
11. (1) If you eat too much turkey, then you will get sick.
 (2) Kinsley got sick.
 (3) Kinsley ate too much turkey.
12. (1) If $\angle 2$ is acute, then $\angle 3$ is obtuse.
 (2) If $\angle 3$ is obtuse, then $\angle 4$ is acute.
 (3) If $\angle 2$ is acute, then $\angle 4$ is acute.

In Exercises 13–18, assume the following statements are true.

- If Susan screams, then the dog will run away.
 - If the dog licks Susan, then Susan will scream.
 - If Carl tells the dog to “kiss,” then the dog will lick Susan.
 - Carl tells the dog to “kiss.”
13. Write the contrapositive of the third statement.
14. Write the inverse of the second statement.
15. Write the converse of the first statement.
16. Write the premises in an order which makes a valid argument.
17. Did the dog lick Susan? Explain.
18. Did the dog run away? Explain.