

Name \_\_\_\_\_ Hour \_\_\_\_\_

**Decide whether *inductive* or *deductive* reasoning is used to reach the conclusion.**

1. It normally takes you 20 minutes to walk home from school. By walking faster one day, you make it in 15 minutes. The following day, you make it in 12 minutes. You conclude that you could make the trip in as little as 10 minutes.
2. For the past three Wednesdays, the cafeteria has served macaroni and cheese for lunch. You conclude that the cafeteria will serve macaroni and cheese for lunch this Wednesday.
3. Natalie knows that Daniel is taller than David. She also knows that David is taller than Nicole. Natalie reasons that Daniel is taller than Nicole.
4. After running several trials to observe the temperatures at which distilled water and saltwater boil, you conclude that adding salt to water will raise the boiling temperature of water.

**Use the Law of Detachment to make a valid conclusion in the situation.**

5. If Aaron is promoted to manager at his workplace, then Andy will be promoted to assistant manager. Aaron is the new manager.
6. If Dallas strikes out the next batter, then his baseball team will win their game. The next batter strikes out.
7. If you order a slice of pie, then it will be served with ice cream. Lilly orders a slice of apple pie.

**Use the Law of Syllogism to write the statement that follows from the pair of given statements.**

8. If you mail your insurance payment by noon, then it will arrive by tomorrow. If your insurance payment arrives by tomorrow, then you will not be charged a late fee.
9. If a rectangle has four equal side lengths, then it is a square. If a polygon is a square, then it is a regular polygon.
10. If a triangle is equiangular, then it is equilateral. If a triangle has two angles that measure  $60^\circ$ , then the triangle is equiangular.

# Deductive Reasoning

**Decide whether the conclusion reached from the two statements demonstrates the Law of Detachment or the Law of Syllogism. If it does, state which law of logic was used. If it does not, write invalid.**

11. If Kelly gets the lead in the play, then she will not be able to play intramural volleyball. If Kelly cannot play intramural volleyball, then her volleyball team will need to find a new teammate.

Conclusion: If Kelly gets the lead in the play, then her volleyball team will need to find a new teammate.

12. If you eat too much candy, then you will get a stomach ache. Laura has a stomach ache.

Conclusion: Laura ate too much candy.

13. If Lance spends more than \$30 on gas for his truck, then he will not have enough money to go to the movies with his friends. Lance spends \$40 on gas for his truck.

Conclusion: Lance does not have enough money to go to the movies with his friends.

14. If Phillip gets sick, then he will be absent from school tomorrow. If Phillip gets sick, then he will have to make up his Geometry quiz.

Conclusion: If Phillip is absent from school tomorrow, then he will have to make up his Geometry quiz.

**Identify the hypothesis of the following statement.**

15. If two coplanar lines do not intersect, then they are parallel.

**Identify the conclusion of the following statement.**

16. If two lines are perpendicular to the same line, then they are parallel to each other.

**Write the converse of the conditional statement.**

17. If a triangle is scalene, then each of the triangle's three interior angles is a different measure.

**Write the contrapositive of the conditional statement.**

18. If a quadrilateral is a kite, then it is not a parallelogram.

**Write the inverse of the conditional statement.**

19. If two supplementary angles are not adjacent, then they do not form a linear pair.