

Extra Practice with 2.1 and 2.3

Name _____

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

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

In problems 7-10, decide whether inductive or deductive reasoning is used to reach the conclusion. Explain your reasoning.

- Angela knows that Walt is taller than Peter. She also knows that Peter is taller than Natalie. Angela reasons that Walt is taller than Natalie. **Deductive, it is logic and order**
- Josh knows that Brand X computers cost less than Brand Y computers. All other brands that Josh knows of cost less than Brand X. Josh reasons that Brand Y cost more than all the other brands. **Inductive, based on observations.**
- For the past three Wednesdays, the cafeteria has served macaroni and cheese for lunch. Dana concludes that the cafeteria will serve macaroni and cheese for lunch this Wednesday. **Inductive, based on observations.**
- If you live in Nevada and are between the ages of 16 and 18, then you must take driver's education to get your license. Anthony lives in Nevada, is 16 years old, and has his driver's license. Therefore, Anthony took driver's education. **Deductive, based on logic and order.**

Use law of detachment to make a valid conclusion in the situation.

11. If you get a hit, then your baseball team will win. You hit a home run.

Your team wins the baseball game.

12. If Rylee gets promoted, then Callie will also be promoted. Rylee is promoted.

Callie is also promoted.

13. Any time Kendra runs in a cross country race, if she runs a strong race, then she wins. In the cross country race last Saturday, Kendra ran her best race.

Kendra won the race.

14. If two integers are added together, then the result is an integer. You add an integer x to another integer y .

The sum is an integer.

15. If you double a negative number, then the result is a smaller number. You calculate $2x$, where $x < 0$.

$2x < x$

16. If an integer is divided by one of its factors, then the result is another one of the integer's factors. You divide an even integer x by 2.

The quotient is a factor of x .

Use the law of Syllogism to write the statement that follows from the pair of statements that are given.

17. If Moose is hungry when he goes to the pizza shop, then he'll finish a whole pizza. If Moose eats a whole pizza, then he goes through a pitcher of soda.

If Moose is hungry when he goes to the pizza shop, then he drinks a pitcher of soda.

18. If you mail the payment by noon, then it will arrive by tomorrow. If your payment arrives by tomorrow, then you won't be charged a late fee.

If you mail the payment by noon, then you won't be charged a late fee.

19. If Estelle takes her broker's advice, she'll invest in stock X. If Estelle invests in stock X, she'll earn 50% on her investment by next year.

If Estelle takes her broker's advice, then she'll earn 50% on her investment by next year.

20. If a triangle has two angles of 60° , then the triangle is equiangular. If a triangle is equiangular, then it is also equilateral.

If a triangle has two angles of 60° , then it is also equilateral.

Decide whether the conclusion reached from the two statements demonstrates the **Law of Detachment**, the **Law of Syllogism**, or **neither**.

21. If Cedric plays in a big game, then he gets nervous. If Cedric gets nervous, then he performs well.

Conclusion: If Cedric plays in a big game, then he performs well.

Law of Syllogism.

22. If Leanne spends more than \$30 on her car, then she'll have to wait until next week to buy Michael's birthday gift. Leanna spent \$40 on her car.

Conclusion: Leanne will have to wait until next week to buy Michael's birthday gift.

Law of Detachment

23. If Lavonne gets money, she gives half of it to Sid. If Sid gets money, he gives half of it to Lavonne.

Conclusion: Lavonne and Sid share their money equally.

Neither.