

LESSON 2.3

Practice

For use with pages 86-93

LD

① $P \rightarrow Q$
 ② P
 ③ $\therefore Q$

LS

$P \rightarrow Q$
 $Q \rightarrow R$

 $P \rightarrow R$

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

1. (1) If an angle measures more than 90° , then it is not acute. $P \rightarrow Q$
 (2) $m\angle ABC = 120^\circ$ P
 (3) $\angle ABC$ is not acute. Q

LD

2. (1) All 45° angles are congruent. If all angles are 45° , then they are \cong . $P \rightarrow Q$
 (2) $\angle A \cong \angle B$ Q
 (3) $\angle A$ and $\angle B$ are 45° angles.

INVALID

3. (1) If you order the apple pie, then it will be served with ice cream. $P \rightarrow Q$
 (2) Matthew ordered the apple pie. P
 (3) Matthew was served ice cream. Q

LD

4. (1) If you wear the school colors, then you have school spirit. $P \rightarrow Q$
 (2) If you have school spirit, then the team feels great. $Q \rightarrow R$
 (3) If you wear the school colors, then the team will feel great. $P \rightarrow R$

LS

5. (1) If you eat too much turkey, then you will get sick. $P \rightarrow Q$
 (2) Kinsley got sick. Q
 (3) Kinsley ate too much turkey.

INVALID

6. (1) If $\angle 2$ is acute, then $\angle 3$ is obtuse. $P \rightarrow Q$
 (2) If $\angle 3$ is obtuse, then $\angle 4$ is acute. $Q \rightarrow R$
 (3) If $\angle 2$ is acute, then $\angle 4$ is acute. $P \rightarrow R$

LS

LESSON
2.3**Practice** *continued*
For use with pages 86–93PatternsFacts

In Exercises 7–10, decide whether inductive or deductive reasoning is used to reach the conclusion. **Explain your reasoning.**

7. 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 → heights are facts

8. 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 costs more than all other brands.

Inductive → he does not know all the prices so he is basing it off of a pattern

9. 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 → pattern in the cafeteria

10. 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 → the law in Nevada

In Exercises 11 and 12, state whether the argument is valid. **Explain your reasoning.**

11. Jeff knows that if he does not do his chores in the morning, he will not be allowed to play video games later the same day. Jeff does not play video games on Saturday afternoon. So Jeff did not do his chores on Saturday morning.

INVALID → we do not know that he did not complete his chores

12. Katie knows that all sophomores take driver education in her school. Brandon takes driver education. So Brandon is a sophomore.

INVALID → we do not know that he is a sophomore