LESSON 2.1

NAME _____ DATE _____

Practice C

For use with pages 71–78

Rewrite the conditional statement in if-then form.

1. I will go to the game if I get all of my homework done.
2. The water will freeze if the temperature is 10°F.
3. A student on the high honor roll has at least a 90 average.
4. Bert goes shopping for groceries only on Wednesday.
5. The number 2 is a factor of every even number.

Decide whether the statement is *true* or *false*. If false, provide a counterexample.

6. The equation $-3x - 10 = 5 + 2x$ has exactly one solution.
7. If $x > 0$, then $x^2 > x$.
8. For any real numbers a and b, $|a + b| = |a| + |b|$.
9. If you visited the Jefferson Monument, then you've been to Washington, D.C.
10. Two collinear rays intersect.

Write the converse, inverse, and contrapositive of each statement. Identify each statement as *true* or *false*.

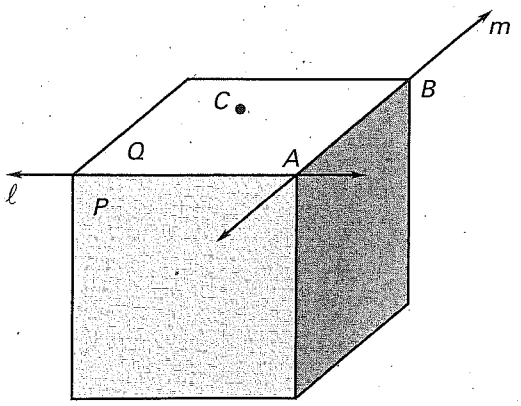
11. If you like volleyball, then you like to be at the beach.
12. If $x + 1$ is even, then x is odd.
13. If $m\angle P = 109°$, then $\angle P$ is obtuse.

Draw a sketch to illustrate each postulate.

14. A line contains at least two points.
15. Through any three noncollinear points there exists exactly one plane.
16. A plane contains at least three noncollinear points.

Use the diagram to state the postulate(s) that verifies the truth of the statement.

17. The point A is the intersection of lines l and m.
18. The points A, B, and C lie in a plane (labeled Q).
19. The planes P and Q interesect in a line (labeled l).
20. The points A and B lie on a line (labeled m).



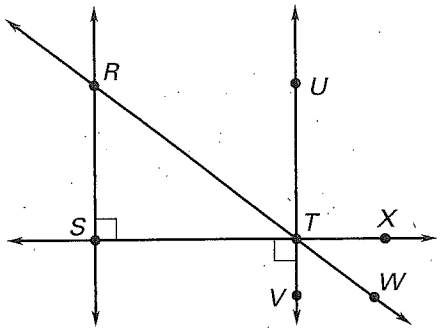
LESSON 2.2

NAME _____ DATE _____

Practice C

For use with pages 79–85

Use the diagram to determine whether the statement is *true* or *false*.



1. Points R, S, and T are collinear.
2. $\angle UTR$ and $\angle UTW$ are supplementary.
3. Points R, S, and T lie in the same plane.
4. $\overleftrightarrow{TS}$ is perpendicular to $\overleftrightarrow{RS}$.
5. $\angle VTS$ and $\angle UTX$ are vertical angles.
6. $\angle STR$ and $\angle RTU$ are complementary.
7. Point W is in the interior of $\angle UTS$.

Rewrite the biconditional statement as a conditional statement and its converse.

8. An angle is acute if and only if it measures less than 90°.
9. Three points are collinear if and only if they lie on the same line.
10. I eat pizza if and only if it is Friday night.
11. The game is cancelled if and only if it rains.
12. A number is divisible by 6 if and only if it is divisible by 2 and 3.

Write the converse of each true statement. If the converse is also true, combine the statements to write a true biconditional statement. If the converse is false, give a counterexample.

13. If you live in Detroit, then you live in Michigan.
14. If an angle measures 30°, then it is acute.
15. If two angles are supplementary, then the sum of their measures is 180°.
16. If two angles are congruent, then they have the same measure.
17. If two angles are vertical angles, then they are not adjacent.

In Exercises 18–20, use the information in the table.

Instrument	*Frequency (cycles per second)*	
	Lower limit	*Upper limit*
E-flat baritone saxophone	69	416
B-flat tenor saxophone	104	622
E-flat alto saxophone	138	831

18. Write a definition of a B-flat tenor saxophone.
19. If the frequency of a note played on a saxophone was 100 cycles per second, what could you conclude?
20. If the frequency of a note played on a saxophone was 150 cycles per second, what could you conclude?

Lesson 2.2

LESSON 2.3

NAME _____ DATE _____

Practice C

For use with pages 87–95

Using *p* and *q* below, write the symbolic statement in words. Assume *p* and *q* are true. Decide if each symbolic statement is *true* or *false*.

p: The value of x is -4. q: $3x + 2 = -10$

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 you are a student, then you have lots of homework.
   (2) If you have lots of homework, then you have no social life.
   (3) If you are a student, then you have no social life.
8. (1) If the lines are perpendicular, then they intersect to form a right angle.
   (2) Line l is perpendicular to line m.
   (3) Lines l and m intersect to form a right angle.
9. (1) Vertical angles are congruent.
   (2) $\angle A \cong \angle B$
   (3) $\angle A$ and $\angle B$ are vertical angles.
10. (1) If the quadrilateral is a square, then it has four right angles.
    (2) Quadrilateral $ABCD$ has four right angles.
    (3) Quadrilateral $ABCD$ is a square.
11. (1) If you practice your clarinet, then you will improve.
    (2) Kevin practices his clarinet.
    (3) Kevin's clarinet playing improves.
12. (1) If $m\angle 2 \neq 40°$, then $m\angle 3 \neq 140°$.
    (2) If $m\angle 3 \neq 140°$, the $m\angle 4 \neq 40°$.
    (3) If $m\angle 2 \neq 40°$, then $m\angle 4 \neq 40°$.

In Exercises 13–17, assume the following statements are true.

- If I call the superintendent, then I must pay the rent. $(p \rightarrow q)$
- If the apartment ceiling is not leaking, then it is not raining. $(\sim r \rightarrow \sim s)$
- I will call the superintendent if the apartment ceiling leaks. $(r \rightarrow p)$
- If it is not raining, then it is not Tuesday. $(\sim s \rightarrow \sim t)$

13. Write the contrapositive of the second statement.
14. Write the contrapositive of the fourth statement.
15. Write the premises in an order which makes a valid argument.
16. It is Tuesday. Can you conclude that you must pay the rent? Explain.
17. It is not Tuesday. Can you conclude you did not pay the rent? Explain.