



Vocabulary

Review

Underline the *hypothesis* in each statement.

1. If it rains on Friday, I won't have to cut the grass on Saturday.
2. If I go to sleep early tonight, then I won't be late for school tomorrow.
3. A triangle is equilateral if it has three congruent sides.
4. I'll know how to write biconditionals if I can identify a hypothesis and a conclusion.

Vocabulary Builder

bi- (prefix) by

Definition: *bi-* is a prefix that means having two.

Examples: A *bicycle* has two wheels. Someone who is *bilingual* speaks two languages fluently.

Use Your Vocabulary

Draw a line from each word in Column A to its meaning in Column B.

Column A

5. biannually (adverb)
6. biathlon (noun)
7. bicentennial (adjective)
8. bicoastal (adjective)
9. biped (noun)
10. bipartisan (adjective)
11. biplane (noun)
12. biweekly (adjective)

Column B

- occurring every two hundred years
- a two-footed animal
- having two coasts
- supported by two parties
- occurring every two weeks
- occurring every two years
- a plane with two sets of wings
- a two-event athletic contest

Key Concept Biconditional Statements

A *biconditional* combines $p \rightarrow q$ and $q \rightarrow p$ as $p \leftrightarrow q$.

You read $p \leftrightarrow q$ as “ p if and only if q .”

13. Complete the biconditional.

A ray is an angle bisector ? it divides an angle into two congruent angles.



Problem 1 Writing a Biconditional

Got It? What is the converse of the following true conditional? If the converse is also true, rewrite the statements as a biconditional.

If two angles have equal measure, then the angles are congruent.

14. Identify the **hypothesis** (p) and the **conclusion** (q).

p : _____

q : _____

15. Circle the converse ($q \rightarrow p$) of the conditional.

If two angles do *not* have equal measure, then the angles are *not* congruent.

If two angles are congruent, then the angles have equal measure.

If two angles are *not* congruent, then the angles do *not* have equal measure.

16. Now write the statements as a biconditional ($p \leftrightarrow q$).

_____ if and only if _____.



Problem 2 Identifying the Conditionals in a Biconditional

Got It? What are the two conditionals that form this biconditional?

Two numbers are reciprocals if and only if their product is 1.

17. Identify p and q .

p : _____

q : _____

18. Write the conditional $p \rightarrow q$.

If _____,

then _____.

19. Write the conditional $q \rightarrow p$.

If _____,

then _____.



Problem 3 Writing a Definition as a Biconditional

Got It? Is this definition of straight angle reversible? If yes, write it as a true biconditional.

A straight angle is an angle that measures 180.

20. Reversible means you can reverse **p** and in the conditional.

21. Write the conditional.

If ,

then .

22. Write the converse.

If ,

then .

23. Write the biconditional.

,

if and only if .



Problem 4 Identifying Good Definitions

Got It? Is the following statement a good definition? Explain.

A square is a figure with four right angles.

24. Write the conditional.

25. Write the converse.

26. Which statement is true, the conditional, the converse, or both?

27. Is the definition of a square a good definition? Explain.



Lesson Check • Do you UNDERSTAND?

Compare and Contrast Which of the following statements is a better definition of a linear pair?

A linear pair is a pair of supplementary angles.

A linear pair is a pair of adjacent angles with noncommon sides that are opposite rays.

Use the figures below for Exercises 28–31.

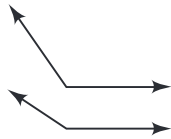


Figure 1

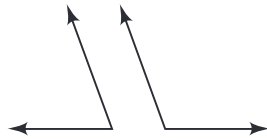


Figure 2

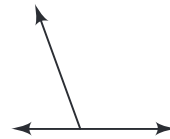


Figure 3

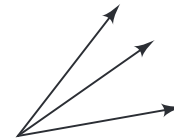


Figure 4

Underline the correct number or numbers to complete each sentence.

28. Figure(s) 1 / 2 / 3 / 4 show(s) linear pairs.

29. Figure(s) 1 / 2 / 3 / 4 show(s) supplementary angles.

30. Figure(s) 1 / 2 / 3 / 4 show(s) adjacent angles.

31. Figure(s) 1 / 2 / 3 / 4 show(s) adjacent angles whose noncommon sides are opposite rays.

32. Underline the correct word to complete the sentence.

Supplementary angles are always / sometimes / never linear pairs.

33. Write the better definition of a linear pair.



Math Success

Check off the vocabulary words that you understand.

biconditional

conditional

hypothesis

conclusion

Rate how well you can use biconditionals.

