



Prepares for G.CO.9 Prove theorems about lines and

Prepares for G.CO.10 Prove theorems about triangles. Prepares for G.CO.11 Prove theorems about parallelograms.

Objective To write biconditionals and recognize good definitions

A biconditional is a single true

statement that combines a true conditional and its true converse. You can write a biconditional by joining the two parts of each conditional with the phrase if and only if.

Essential Understanding A definition is good if it can be written as a biconditional.



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

If the sum of the measures of two angles is 180, then the two angles are supplementary.



Key Concept Biconditional Statements

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

Example

A point is a midpoint if and only if it divides a segment into two congruent segments.

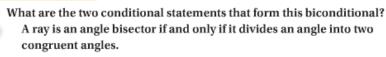
Symbols $p \leftrightarrow q$

How to Read It "p if and only if q"

You can write a biconditional as two conditionals that are converses.



Problem 2 Identifying the Conditionals in a Biconditional



A good definition is a statement that can help you identify or classify an object. A good definition has several important components.

- A good definition uses clearly understood terms. These terms should be commonly understood or already defined.
- A good definition is precise. Good definitions avoid words such as large, sort of, and almost.
- A good definition is reversible. That means you can write a good definition as a true biconditional.



Is this definition of *quadrilateral* reversible? If yes, write it as a true biconditional. Definition: A quadrilateral is a polygon with four sides.

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

A straight angle is an angle that measures 180.

Multiple Choice Which of the following is a good definition?

A A fish is an animal that swims.

B Rectangles have four corners.

C Giraffes are animals with very long necks.

D A penny is a coin worth one cent.

One way to show that a statement is *not* a good definition is to find a counterexample.