

9/24/19 - Warm Up Problem

Each statement is true. Decide if its converse is also true. If it is, write the statement as a biconditional. If it is not, write not possible.

1. If it is a leap year, then it has 366 days.

If there are 366 days, then it is a leap year.
~~It is a leap year~~ iff it has 366 days.

2. If two lines are perpendicular, then they intersect.

not possible

3. If two angles are complementary, then they add up to 90° .

Two angles are complementary iff they add up to 90°

Section 2.4 - Deductive Reasoning

Goals: Use the Law of Detachment and the Law of Syllogism to draw conclusions

Inductive Reasoning:

Deductive Reasoning:

An auto mechanic knows that if a car has a dead battery, then the car will not start. A mechanic begins to work on the car and finds the battery is dead. What conclusion can he make?

Car won't start

Law of Detachment

If a conditional is true and its hypothesis is true, then its conclusion is true.

What can you conclude from the following statements?

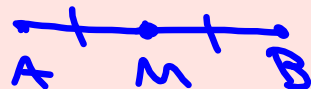
If it is Friday or Saturday night, then Mary goes to a movie.
Today is Friday.

Mary is going to a movie

If a baseball player is a pitcher, then that player should not pitch a complete game two days in a row. Vladimir Nuñez is a pitcher and on Monday he pitches a complete game.

Vladimir will not pitch Tues.

If a point is a midpoint, then it divides a segment into two congruent pieces. M is the midpoint of Segment AB.



$$\overline{AM} \cong \overline{MB}$$

~~If you pass 9th grade, then you are in 10th grade.~~
~~If you are in 10th grade, then you are a sophomore.~~

Law of Syllogism

If $p \rightarrow q$ and $q \rightarrow r$ are true statements, then $p \rightarrow r$ is a true statement.

Use the Law of Syllogism to draw a conclusion from the following true statements.

If you live in Sioux Falls, then ~~you live in South Dakota.~~ If ~~you live in South Dakota,~~ then you live in the United States.

If you live in SF, then you live in United States.

If Rick takes chemistry this year, then ~~Jesse will be Rick's lab partner.~~ If ~~Jesse is Rick's lab partner,~~ then Rick will get an A in chemistry.

If Rick takes chem, then Rick will get an A in chem.

If two angles are vertical angles, ~~then they are congruent.~~ If ~~angles are congruent,~~ then they have the same measure.

If 2 angles are vertical, then they have same measure.

Use both the Law of Detachment and the Law of Syllogism to draw conclusions from the following true statements.

If a river is more than 4000 miles long, then it is longer than the Amazon.

If a river is longer than the Amazon, then it is the longest river in the world.

The Nile is 4132 miles long.

Nile is longest in world

The Volga River is in Europe.

If a river is less than 2300 miles long, it is not one of the world's ten longest rivers. If a river is in Europe, then it is less than 2300 miles long.

Volga is not in top 10



Assignment:

Math XL

Concept 5 part 3