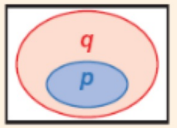
Lesson 2-2

Conditional Statements
Day 1

Conditional Statements

DEFINITION	SYMBOLS	VENN DIAGRAM
A _____ is a statement that can be written in the form "if *p*, then *q*."	$p \rightarrow q$	
The _____ is the part *p* of a conditional statement following the word *if*.		
The _____ is the part *q* of a conditional statement following the word *then*.		

By phrasing a conjecture as an if-then statement, you can quickly identify its hypothesis and conclusion.

Writing Math

"If *p*, then *q*" can also be written as "if *p*, *q*," "*q*, if *p*," "*p* implies *q*," and "*p* only if *q*."

Identify the hypothesis and conclusion of each conditional.

A. If today is Thanksgiving Day, then today is Thursday.

Hypothesis:

Conclusion:

B. A number is a rational number if it is an integer.

Hypothesis:

Conclusion:

"A number is divisible by 3 if it is divisible by 6."

Hypothesis:

Conclusion:

Write a conditional statement from the following.

An obtuse triangle has exactly one obtuse angle.

Write a conditional statement from the sentence "Two angles that are complementary are acute."

Write a conditional statement from the sentence "Two angles that are complementary are acute."

Determine if the conditional is true. If false, give a counterexample.

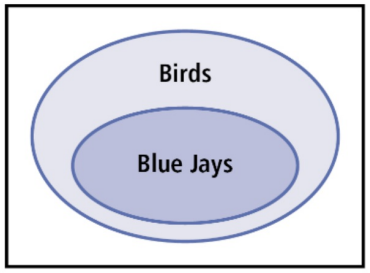
If two angles are acute, then they are congruent.

Determine if the conditional is true. If false, give a counterexample.

If this month is August, then next month is September.

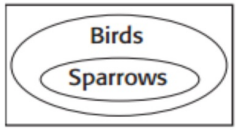
Determine if the conditional "If a number is odd, then it is divisible by 3" is true. If false, give a counterexample.

Write a conditional statement from the following.

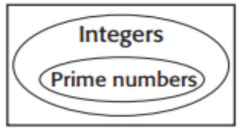


1. Write an if-then statement based on each Venn diagram.

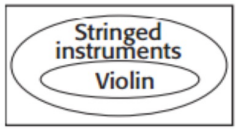
a.



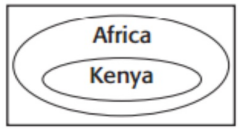
b.



c.



d.



a.

b.

c.

d.

Create a Venn diagram for the conditional
If angles are supplementary, then their sum is 180 degrees.

Create a Venn diagram for the conditional
Good students do their homework

3. **Explain** how to write an if-then statement based on a Venn diagram.

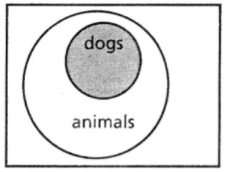
4. **Describe** how an if-then statement might be used in an advertisement.

The **negation** of statement p is "not p," written as $\sim p$. The negation of a true statement is false, and the negation of a false statement is true.

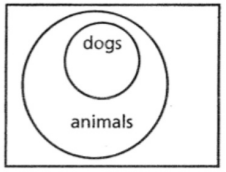
Shade the region in the Venn diagram that represents each statement. Part A is already filled in as an example.

All dogs are animals. If an object is a dog, then it is an animal.
(p: an object is a dog; q: it is an animal)

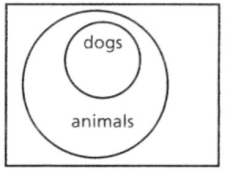
A p



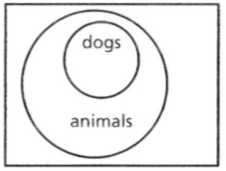
B q



C $\sim p$

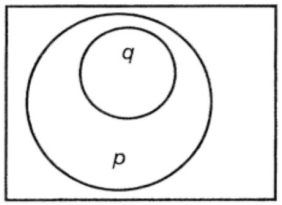


D $\sim q$

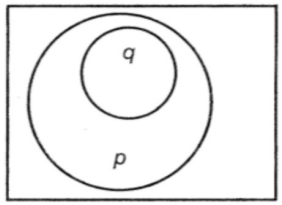


Four Venn diagrams related to $q \rightarrow p$ are shown. Shade the region that represents each statement.

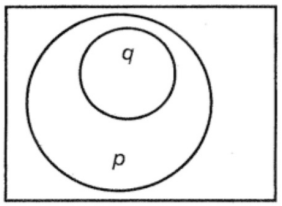
1. q



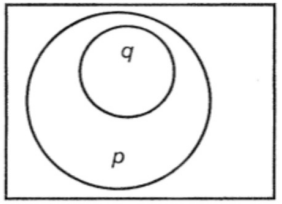
2. p



3. $\sim q$



4. $\sim p$



Lesson Quiz: Part I

Identify the hypothesis and conclusion of each conditional.

1. A triangle with one right angle is a right triangle.

2. All even numbers are divisible by 2.

3. Determine if the statement "If $n^2 = 144$, then $n = 12$" is true. If false, give a counterexample.