

HW  
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#5-7, 13-15,  
16-22 even,  
28, 30, 37-42

# Geometry

## Chapter 2 Section 2-2

## Vocabulary

Conditional	An if-then statement, for example: If $p$ then $q$ (written $p \rightarrow q$ )
Hypothesis	The part of the statement following if ( $p$ )
Conclusion	The part of the statement following then ( $q$ )
Truth Value	Identifies a statement true or false
Equivalent Statements	Statements that have the same truth value

# Introduction to Conditionals

The company that prints the bumper sticker at the left below accidentally reworded the original statement and printed the sticker three different ways. Suppose the original bumper sticker is true. Are the other bumper stickers true or false? Explain.



- A **If you are too close, THEN YOU CAN READ THIS.**
- B **If you cannot read this, then you are not too close.**
- C **If you are not too close, THEN YOU CANNOT READ THIS.**

# Identifying Conditionals

Adjacent angles share a ray in common.

If two angles are adjacent then they share a ray in common.

**H:** (If) Adjacent angles      **C:** (Then) Share a ray in common

If Coach Johnson's baby girl is born by her due date, she will be born in January

**H:** Coach Johnson's baby girl is born by her due date      **C:** She will be born in January

# Identifying Truth Values

If an animal is a chihuahua then it is a dog.

TRUE

If a person lives in LA, then he or she is American.

FALSE

**\*\*COUNTEREXAMPLE**

If you are The Pope, then you are a Catholic.

TRUE

# Conditional Statement Types

Statement	Instructions	Written	Read
<i>Negation</i>	The opposite of a statement	$\sim p$	Not p
<i>Conditional</i>	Use the given hypothesis and conclusion	$p \rightarrow q$	If p, then q
<i>Converse</i>	Exchange the hypothesis and conclusion	$q \rightarrow p$	If q, then p
<i>Inverse</i>	Negate the hypothesis and conclusion	$\sim p \rightarrow \sim q$	If not p, then not q
<i>Contrapositive</i>	Negate and exchange the hypothesis and conclusion	$\sim q \rightarrow \sim p$	If not q, then not p

# Conditional Statement Truth Values

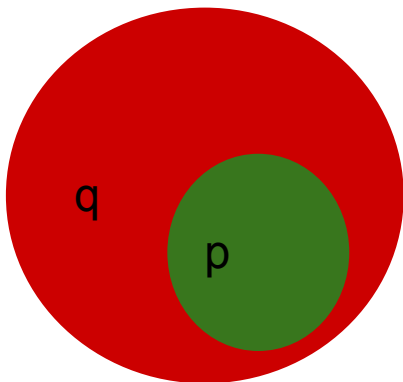
p: Two rays are opposite

q: Two rays are on a straight line

Statement	Symbols	Example	Truth
<i>Negation</i>	$\sim p$	Two rays are not opposite	-----
<i>Conditional</i>	$p \rightarrow q$	If two rays are opposite, then they are on a straight line.	<b>T</b>
<i>Converse</i>	$q \rightarrow p$	If two rays are on a straight line, then they are opposite.	<b>F</b>
<i>Inverse</i>	$\sim p \rightarrow \sim q$	If two rays are not opposite, then they are not on a straight line	<b>F</b>
<i>Contrapositive</i>	$\sim q \rightarrow \sim p$	If two rays are not on a straight line, then they are not opposite.	<b>T</b>

## Venn diagrams

"If p, then q" can be illustrated by a Venn diagram:



If something falls in group p, then it always falls in group q

# Homework

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