### 2 - 3 Conditional Statements

# conditional statement: written in "if - then" form

#### How it is written:

hypothesis: phrase after "if"

conclusion: Phrase after "then"

Identify the hypothesis and conclusion in the following statements.

Ex: If points A, B, and C lie on line  $\ell$ , then they are collinear.

Ex: The Redskins will make the playoffs if they finish the season 10-0.

Write each of the following in "if-then" form.

Ex: An angle with a measure greater than 90° is an obtuse angle.

Ex: Perpendicular lines intersect.

If two lines are perpendicular, then they intersect.

## Determine the truth value of the following statement for each set of conditions.

If you get 100% on your test, your teacher gives you an A.

- a.) You get 100%; your teacher gives you an A.
- T ← F b.) You get 100%; your teacher gives you a B. ←
- c.) You get 98%; your teacher gives you an A.  $\top$
- d.) You get 85%; your teacher gives you a B.

#### **Truth Table**

#### **Conditional Statements**

p	q	p  o q
Т	T	$\vdash$
T	F	Ψ.
F	T	۲
F	F	7

\*\*\* Only F when T->F

#### Conditional

Formed by ... given # and C

Symbols P -> 9

#### Converse

Formed by ... Switch the H and C

#### Inverse

Formed by... negate the H and C

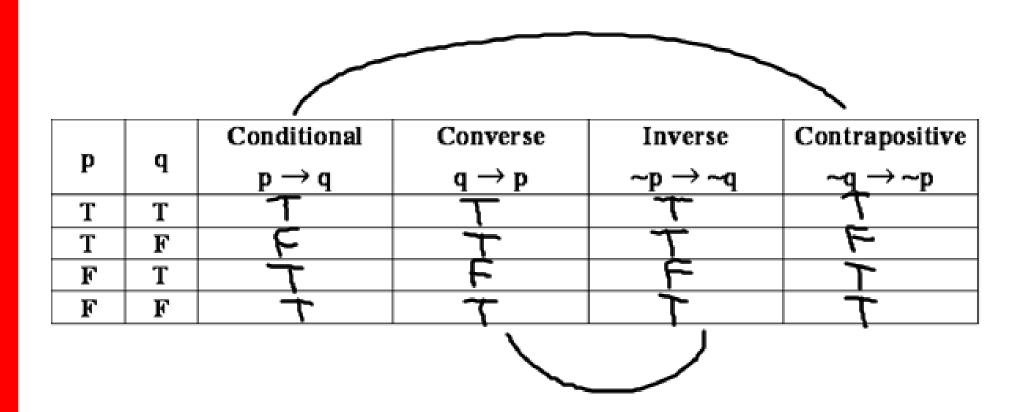
Symbols  $\sim p \rightarrow \sim q$ 

#### Contrapositive

Formed by... negate and switch H and C

Symbols ~q→~p

#### **Truth Table**



logically equivalent: Statements with the same truth value

Example: conditional/contrapositive converse/inverse

Write the converse, inverse, and contrapositive of the statement "All squares are rectangles."

Conditional... If a shape is a square, (T) then it is a rectangle.

Converse... If a shape is a rectangle, (F) then it is a square.

Inverse... If a shape is not a square, (F) then it is not a rectangle.

Contrapositive... If a shape is not a (T) rectangle, then it is not a square.

Homework:

2-3 WS