Discussion 7/17

Contrapositives:

If a, then b

contrapositive is: if not b, then not a

Example: If you drive the 60 freeway west bound, then you'll get to LA.

If you don't get to LA, then you didnot drive on the 60 freeway west bound.

Converse:

If a then b

converse is: If b then a

Example continued:

If you are in LA, then you drove on the 60 freeway west bound.

Inverse:

If a, then b

Inverse is: If Not A, then not b.

Example continued:

If you do not drive the 60 freeway west bound, the you won't be in LA.

Example: let a, b, n be integers. If ab is not a multiple of n, then a is not a multiple on n and b is not a multiple of n.

Proof by Contrapositive: If a ~~or~~ b is a multiple of n, then ab is a multiple of n.

Suppose a is a multiple of n. Then $\exists$ int. k such that $a = kn$.

So, $ab = (kn)b = n(kb)$

Therefore ~~kb~~ is a multiple of n.

Suppose b is an int. of n. Then $\exists$ exist an int. l that satisfies $a = ln$

so, $ab = a(ln) = n(al)$

Since al is also an int., we conclude that ab is an int. multiple of n. $\blacksquare$