Ex. Write the converse, inverse, and contrapositive of the statement and determine the truth value for each. If false, give a counterexample.

If a person lives in Heber, then that person lives in Utah.

Truth value: \( T \)

Converse: If a person lives in Utah, then he lives in Heber.

Truth value: \( F \)

Inverse: If a person does not live in Heber, then he does not live in Utah.

Truth value: \( F \)

Contrapositive: If a person does not live in Utah, then he does not live in Heber.

Truth value: \( T \)

Building a logical argument:

Both statements must be true.

Ex. If a person buys worms, then they can go fishing.

If a person can go fishing, then they can catch dinner.

New logical statement:

If a person buys worms, then he can catch dinner.

Ex. If \( x = 7 \), then \( 4x = 28 \).

If \( 4x = 28 \), then \( 20x = 140 \).

New logical statement:

If \( x = 7 \), then \( 20x = 140 \).

(\( \neq \) means does not equal)

Homework: p.27 #11, 13, 15, 22, 23, 25, 28, 31

Converse, INVERSE, CONTRAPOSITIVE