D. Tommy ate his broccoli and still didn't get any ice cream.

2. Suppose that your shady uncle offers you the following deal: If you loan him your car, then he will bring you tacos. In which of the following situations would it be fair to say that your uncle is a liar (i.e., that his statement was false)? Select all that apply.

A. You loan him your car. He brings you tacos.

B. You loan him your car. He never buys you tacos.

C. You don't loan him your car. He still brings you tacos.

D. You don't loan him your car. He never brings you tacos.

3. Consider the *sentence*, "if $x \geq 10$, then $x^2 \geq 25$." This sentence becomes a statement when we replace x by a value, or "capture" the x in the scope of a quantifier. Which of the following claims are true (select all that apply)?

A. If we replace x by 15, then the resulting statement is true. (Note, $15^2 = 225$.)

B. If we replace x by 3, then the resulting statement is true.

C. If we replace x by 6, then the resulting statement is true.

D. The universal generalization ("for all x, if $x \geq 10$ the $x^2 \geq 25$") is true.

E. There is a number we could replace x with that makes the statement false.

4. Consider the statement, "If I see a movie, then I eat popcorn" (which happens to be true). Based solely on your intuition of English, which of the following statements mean the same thing? Select all that apply.

A. If I eat popcorn, then I see a movie.

B. If I don't eat popcorn, then I don't see a movie.

C. It is necessary that I eat popcorn when I see a movie.

D. To see a movie, it is sufficient for me to eat popcorn.

E. I only watch a movie if I eat popcorn.

1.2.2 Understanding the Truth Table

The truth value of the implication is determined by the truth values of its two parts. Our definition of the truth conditions for an implication says that there is only one way for an implication to be false: when the hypothesis is true and the conclusion is false.