Section 1.5: Truth Table for the Conditional/Implication statement

The conditional statement (if-then) contains:

- "If" portion (the hypothesis/antecedent)
- "Then" portion (conclusion/consequent)
- Symbolic logic: $P \rightarrow Q$

The Conditional ("if – then" statement) Truth Table

Your advisor promises: If you pass math, then you will graduate.

Case 1: If I pass math, then I will graduate.

Case 2: If I pass math, then I will not graduate.

Case 3: If I do not pass math, then I will graduate.

Case 4: If I do not pass math, then I will not graduate.

General Rule for the Conditional Truth Table:

Create a Truth Table for each statement

1. $P \rightarrow Q$

2. $\sim Q \rightarrow P$

3. $(\sim P \rightarrow Q) \wedge \sim Q$

4. $\sim Q \rightarrow \sim P$

5. $(\sim Q \rightarrow P) \wedge \sim P$

6. $\big((P \rightarrow \sim Q) \wedge \sim P\big) \rightarrow \sim Q$

7. $(\sim P \vee Q) \rightarrow R$

Individual Truth Value for Implications

1. If $5 > 10$, then $-1 > 6$. Is this conditional true or false?

2. If Richmond is the capital of Virginia, then Manila is the capital of Iraq. Is this conditional true or false?

3. Given P is a true statement, Q is a false statement, and r is a false statement, is the following true or false?