Conditional Statements Reference Sheet

Conditional Statements

If a polygon is a triangle, then it has 3 sides.
\[(\text{hypothesis})\]
\[(\text{conclusion})\]

A conditional statement is a statement that can be written in if-then form

If-then form: If \[\_\] , then \[\_\]

Ex. All hippos are purple.
If-then form: If an animal is a Hippo, then it is purple.
Hypothesis: An animal is a Hippo.
Conclusion: It is purple.

Related Conditional Statements

Original: If an animal is a Hippo, then it is purple

Converse: Switch the hypothesis and conclusion
Ex. If an animal is purple, then it is a Hippo

Inverse: Negate the hypothesis and conclusion
Ex. If an animal is NOT a Hippo, then it is NOT purple.

Contrapositive: Switch and negate the hypothesis and conclusion
Ex. If an animal is NOT purple, then it is NOT a Hippo.

Other Vocabulary

Biconditional Statement:
Ex. A rectangle is a square if all sides are \[\sim\]

If and only if:

Means:
- If a rectangle is a square, then all sides \[\sim\]
- If a rectangle has all sides \[\sim\], then it is a square
- If a rectangle is not a square, then all sides not \[\sim\]
- If a rectangle does not have all \[\sim\] sides, then it is not a square

Counterexample: a Gray Hippo

Conjecture: an educated guess