

2.1 Conditional Statements

If _____, then _____



Conditional Statement

- Statement that is made up of two parts; hypothesis and conclusion
- In the conditional statement "If it is Friday, then there is a football game," "it is Friday" is the Hypothesis and "there is a football game" conclusion.

Identify the Hypothesis and Conclusion

- If it has six legs, then it is an insect.
- I will go to the mall if we do not have practice.
- You make a basket to win the game.

*If you make a basket
then you win the game*

Converse

- In the converse you switch the placement of the hypothesis and conclusion
- Conditional statement: If B is between A, C then $AB+BC=AC$
- Converse: If $AB+BC=AC$, then B is between A, C

Negation

- Negation means to change the meaning of the problem
- ex. "I did my math" becomes "I did not do my math"
- ex. "It is not raining" becomes "It is raining"
- There are two negations for conditional statements; the inverse and the contrapositive

Inverse

- Negation of the conditional statement
- Conditional statement is "If it is raining then we will not go outside."
- Inverse says "If it is not raining, then we will go outside"

Contrapositive

- Negation of the converse
- Converse "If we do not go outside, then it is raining"
- Contrapositive "If we go outside, then it is not raining"

Symbolic Notation

Q - well will not go outside
 P - It is raining

- In section 3, we will use notation to describe the four statements based on the order as well as other factors

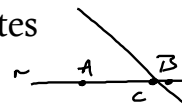
- Conditional $P \rightarrow Q$
 - Converse $Q \rightarrow P$
 - Inverse $\sim P \rightarrow \sim Q$
 - Contrapositive $\sim Q \rightarrow \sim P$
- \sim Negation

Equivalent Statements

- When 2 statements are both true or both false
- Conditional and Contrapositive go together
- Converse and the Inverse go together
- H: If measure angle A is 30
- C: It is acute

Cond	T
Conv	F
Inv	F
Contr	T

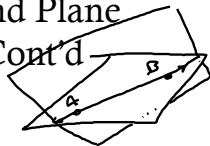
Point, Line, and Plane Postulates



- Ps 5 Through any two points there is exactly one line
- Ps 6 A line contains at least two points
- Ps 7 If two lines intersect, then their intersection is exactly one point
- Ps 8 Through any three noncollinear points there exists exactly one plane



Point, Line, and Plane Postulates Cont'd



- Ps 9 A plane contains at least three noncollinear points
- Ps 10 If two points lie in a plane, then the line containing them lies in the plane
- Ps 11 If two planes intersect, then their intersection is a line

Using the Postulates

- In diagram
 - Identify based on a diagram of the postulates
- Rewriting in converse, inverse, and Contrapositive
 - If exactly one line passes through two points then the points are distinct
 - If two points are not distinct then it is not true that exactly one line passes through it
 - If it is not true that exactly one line passes through two points, then the two points are not distinct

Equivalent