

(24) If 2 lines lie in the same plane, then they are coplanar

Conv. \rightarrow If 2 lines are coplanar, then they are in the same plane

Inv. \rightarrow If 2 lines are not in the same plane, then they are not coplanar

Cont. \rightarrow If 2 lines are not coplanar, then they are not in the same plane

Biconditionals

- form new proposition from 2 old ones by saying 1st is true if & only if 2nd is true
- if conditional & converse are true, then we can write as a biconditional
($p \rightarrow q$ is true AND $q \rightarrow p$ is true)
- denote "p if and only if q" by $p \leftrightarrow q$ (iff)

EX → If it is July 4th in the US, then it is American Independence Day

Conv. → If it is American Independence Day, then it is July 4th in the US

B.C. → It is July 4th in the US **iff** it is American Independence Day

EX → If you score more points than the other team, then you win the game.

Conv. → If you win the game, then you scored more points than the other team

B.C. → You win the game iff you score more points than the other team

OR You score more points than the other team iff you win the game

EX \rightarrow If it is December 25, then it is Christmas.

Conv. \rightarrow If it is Christmas, then it is Dec. 25

B.C. \rightarrow It is December 25 **iff** it is Christmas

OR It is Christmas **iff** it is December 25

EX \rightarrow If a triangle is a right triangle, then it has exactly 1 right angle

Conv. \rightarrow If a triangle has exactly 1 right angle, then it is a right triangle

B.C. \rightarrow A triangle is a right Δ **iff** it has exactly 1 right angle

OR A triangle has exactly 1 right \angle **iff** it is a right Δ

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HW : p. 101 → 7-18, 34-38, 43-46