

1. Hypothesis: two angles are vertical angles
Conclusion: the two angles are congruent
2. Hypothesis: you stay up late
Conclusion: you will be tired
3. Hypothesis: Sam does not get a C or above on his midterm
Conclusion: he will fail the class
4. Hypothesis: Sandy can beat Jeff in a foot race
Conclusion: Sandy is a faster runner than Jeff
5. Hypothesis: you live in Riverside
Conclusion: you live in California
6. Hypothesis: two lines are perpendicular
Conclusion: the two lines intersect at right angles
7. Hypothesis: two angles are supplementary
Conclusion: the measure of their sum equals 180°
8. Hypothesis: it is black
Conclusion: it is not white
9. Hypothesis: points lie in the same plane
Conclusion: the points are coplanar
10. Hypothesis: you live in Texas
Conclusion: you live in the U.S.A.

11. Hypothesis: two lines intersect at right angles
Conclusion: the two lines are perpendicular
12. Hypothesis: n is an even number
Conclusion: n^2 is an even number
13. If the gas tank is empty, then the tank needs gasoline.
14. If the players on the team play a poor game, then the game will be lost.
15. If Nancy lost track of time, then she was late for the meeting.
16. If Colin forgets to send in his payment, then he will receive a late charge.
17. If two angles are congruent, then the two angles are vertical angles.
18. If you are tired, then you stayed up late.
19. If Sam failed the class, then he did not get a C or above on his midterm.
20. If Sandy is a faster runner than Jeff, then Sandy can beat Jeff in a foot race.
21. If you live in California, then you live in Riverside.
22. If two lines intersect at right angles, then the two lines are perpendicular.

23. If the measure of the sum of two angles equals 180° , then the two angles are supplementary.
24. If it is not white, then it is black.
25. If three points are coplanar, then the three points lie in the same plane.
26. If you live in the U.S.A., then you live in Texas.
27. If two lines are perpendicular, then the two lines intersect at right angles.
28. If n^2 is an even number, then n is an even number.
29. #4 and #6 are biconditional
30. #7, #9, #11, and #12 are biconditional
31. Invalid iff -The converse fails. If the grass is wet, then it may have gotten wet by the sprinklers.
32. Invalid iff - The conditional fails. Some people that live in Texas are not Americans.
The converse fails. There are Americans that do not live in Texas.
33. Invalid iff - The conditional fails. If the animal is a mammal, then the animal may be a goat.
34. Valid iff

35. Valid iff

36. Valid iff

37. Invalid iff - The converse fails. If x is an Integer, then x may be equal to 7.

38. Invalid iff -The converse fails. If it is not green, then it could be red.

39. Invalid iff - The converse fails. If x is a Rational number, then x may be equal to $1/2$.

40. Valid iff

41. Valid iff

42. Valid iff

43. Invalid iff - The conditional fails. If Dustin gets a speeding ticket, then he may pay the fine and not do traffic school.
The converse fails. Dustin may be going to driving school for running a red light.

44. Valid iff

45. Invalid iff -The converse fails. If a person is a college graduate, then he/she may be a teacher.

46. Invalid iff -The converse fails. If x is a real number, then x can be $2/3$.
47. Invalid iff -The converse fails. If an object is not a triangle, then it could be a circle.
48. Invalid iff -The converse fails. If Duke is a dog, then he could be a poodle.
49. If Dustin speeds, then his insurance increases.
50. If wages go down, then workers will go on strike.
51. If two angles are not vertical angles, then the two angles are not congruent.
52. If you do not stay up late, then you will not be tired.
53. If Sam gets a C or above on his midterm, then he will not fail the class.
54. If Sandy cannot beat Jeff in a foot race, then Sandy is not a faster runner than Jeff.
55. If you do not live in Riverside, then you do not live in California.
56. If two lines are not perpendicular, then the two lines do not intersect at right angles.
57. If two angles are not supplementary, then the measure of their sum does not equal 180° .

58. If it is not black, then it is white.
59. If points do not lie in the same plane, then the points are not coplanar.
60. If you do not live in Texas, then you do not live in the U.S.A.
61. If two lines do not intersect at right angles, then the two lines are not perpendicular.
62. If n is not an even number, then n^2 is not an even number.
63. If the two angles are not congruent, then the two angles are not vertical angles.
64. If you are not tired, then you did not stay up late.
65. If Sam does not fail the class, then he got a C or above on his midterm.
66. If Sandy is not a faster runner than Jeff, then she cannot beat Jeff in a foot race.
67. If you do not live in California, then you do not live in Riverside.
68. If two lines do not intersect at right angles, then the two lines are not perpendicular.
69. If the measure of their sum of two angles measure does not equal 180° , then the two angles are not supplementary.
70. If it is white, then it is not black.

71. If points are not coplanar, then the points do not lie in the same plane.
72. If you do not live in the U.S.A., then you do not live in Texas.
73. If two lines are not perpendicular, then the two lines do not intersect at right angles.
74. If n^2 is not an even number, then n is not an even number.