

Represent each of the following natural language arguments as a formal PC argument using the suggested sentence letters in parentheses. (shamelessly ripped from Hurley, *A Concise Introduction to Logic*, 7th ed., chs. 6 and 7, and Suppes, *Introduction to Logic*, pp. 25-36.)

1. If national elections deteriorate into TV popularity contests, then smooth-talking morons will get elected. Therefore, if national elections do not deteriorate into TV popularity contests, then smooth-talking morons will not get elected. (P, M)
2. Brazil has a huge foreign debt. Therefore, either Brazil or Argentina has a huge foreign debt. (B, A)
3. If fossil fuel combustion continues at its present rate, then a greenhouse effect will occur. If a greenhouse effect occurs, then world temperatures will rise. Therefore, if fossil fuel combustion continues at its present rate, then world temperatures will rise. (C, G, W)
4. If there are dried-up riverbeds on Mars, then water once flowed on the Martian surface. There are dried-up riverbeds on Mars. Therefore, water once flowed on the Martian surface. (R, W)
5. If high school graduates are deficient in reading, they will not be able to compete in the modern world. If high school graduates are deficient in writing, they will not be able to compete in the modern world. Therefore, if high school graduates are deficient in reading, then they are deficient in writing. (R, C, W)
6. The disparity between rich and poor is increasing. Therefore, political control over economic equality will be achieved only if restructuring the economic system along socialist lines implies that political control over economic equality will be achieved. (R, P, S)
7. Einstein won the Nobel Prize either for explaining the photoelectric effect or for the special theory of relativity. But he did win the Nobel Prize for explaining the photoelectric effect. Therefore, Einstein did not win the Nobel Prize for the special theory of relativity. (P, R)
8. If chromosome mapping is successful, then the human genetic code will be deciphered. The human genetic code will not be deciphered and chromosome mapping will be successful. Therefore, new treatments will be developed for hereditary diseases. (M, D, T)
9. Either the USS Arizona or the USS Missouri was not sunk in the attack on Pearl Harbor. Therefore, it is not the case that either the USS Arizona or the USS Missouri was sunk in the attack on Pearl Harbor. (A, M)
10. If racial quotas are adopted for promoting employees, then qualified employees will be passed over; but if racial quotas are not adopted, then prior discrimination will go unaddressed. Either racial quotas will or will not be adopted for promoting employees. Therefore, either qualified employees will be passed over or prior discrimination will go unaddressed. (R, Q, U)
11. If the market is perfectly free, then a single supplier cannot affect prices. If a single supplier cannot affect prices, then there are a large number of suppliers. Moreover, there are a large number of suppliers. Therefore, the market is perfectly free. (M, S, L)
12. Either logic is difficult, or not many students like it. If mathematics is easy, then logic is not difficult. Therefore, if many students like logic, mathematics is not easy. (D, S, M)
13. If the Cards are third, then if the Dodgers are second the Braves will be fourth. Either the Giants will not be first or the Cards will be third. In fact, the Dodgers will be second. Therefore, if the Giants are first, then the Braves will be fourth. (C, D, B, G)
14. If Alfredo wins, then either Bishop or Cummings will place. If Bishop places, then Alfredo will not win. If Dante places, then Cummings will not. Therefore, if Alfredo wins, Dante will not place. (A, B, C, D)

15. If there are no government subsidies of agriculture, then there are government controls of agriculture. If there are government controls of agriculture, there is not an agricultural depression. There is either an agricultural depression or overproduction. As a matter of fact, there is no overproduction. Therefore, there are government subsidies of agriculture. (S, C, D, O)
16. If prices are high, then wages are high. Prices are high or there are price controls. Also, if there are price controls, then there is not an inflation. However, there is an inflation. Therefore, wages are high. (P, W, C, I)
17. If Algernon is in jail, then he is not a nuisance to his family. If he is not in jail, then he is not a disgrace. If he is not a disgrace, then he is in the army. If he is drunk, he is a nuisance to his family. Therefore, he is either not drunk or in the army. (J, N, D, A, I)
18. If, and only if, Roger has entered into the contract, and the contract is legal, and Roger has not performed the contract, Jones will win the lawsuit. If Roger has not accepted Jones' offer, Roger has not entered into the contract. The fact is that Roger has not accepted Jones' offer. Therefore, Jones will not win the lawsuit. (R, L, P, J, O)
19. If this is December, then last month was November. If last month was November, then eleven months ago it was January. If next month will be January, then this is December. Last month was November. Therefore, this is December. (T, L, E, N)
20. If Brown did not enter into the contract, or if Brown performed the contract, Smith will not win the lawsuit. If Brown failed to deliver the goods on the due date, Brown did not perform the contract. The fact is that Brown did enter into the contract and failed to deliver the goods on the due date. Therefore, Smith will win the lawsuit. (C, P, S, G)
21. If the average child watches more than five hours of television per day, then either his power of imagination is improved or he becomes conditioned to expect constant excitement. The average child's power of imagination is not improved by watching television. Also, the average child does watch more than five hours of television per day. Therefore, the average child is conditioned to expect constant excitement. (T, I, C)
22. If a tenth planet exists, then its orbit is perpendicular to that of the other planets. Either a tenth planet is responsible for the death of the dinosaurs, or its orbit is not perpendicular to that of the other planets. A tenth planet is not responsible for the death of the dinosaurs. Therefore, a tenth planet does not exist. (T, P, D)
23. If quotas are imposed on textile imports only if jobs are not lost, then the domestic textile industry will modernize only if the domestic textile industry is not destroyed. If quotas are imposed on textile imports, the domestic textile industry will modernize. The domestic textile industry will modernize only if jobs are not lost. Therefore, if quotas are imposed on textile imports, the domestic textile industry will not be destroyed. (Q, J, M, D)
24. If teachers are allowed to conduct random drug searches on students only if teachers are acting in loco parentis, then if teachers are acting in loco parentis, then students have no Fourth Amendment protections. Either students have no Fourth Amendment protections or if teachers are allowed to conduct random drug searches on students, then teachers are acting in loco parentis. It is not the case that students have no Fourth Amendment protections. Therefore, teachers are not allowed to conduct random drug searches on students. (D, L, P)

25. Either funding for nuclear fusion will be cut or if sufficiently high temperatures are achieved in the laboratory, nuclear fusion will become a reality. Either the supply of hydrogen fuel is limited, or if nuclear fusion becomes a reality, the world's energy problems will be solved. Funding for nuclear fusion will not be cut. Furthermore, the supply of hydrogen fuel is not limited. Therefore, if sufficiently high temperatures are achieved in the laboratory, the world's energy problems will be solved. (F, H, R, L, W)
26. Either the continents are not subject to drift or if Antarctica was always located in the polar region, then it contains no fossils of plants from a temperate climate. If the continents are not subject to drift, then Antarctica contains no fossils of plants from a temperate climate. But it is not the case that Antarctica contains no fossils of plants from a temperate climate. Therefore, Antarctica was not always located in the polar region. (D, P, T)
27. If terrorists take more hostages, then terrorist demands will be met if and only if the media give full coverage to terrorist acts. Either the media will voluntarily limit the flow of information or if the media will recognize they are being exploited by terrorists, they will voluntarily limit the flow of information. Either the media will recognize they are being exploited by terrorists or terrorists will take more hostages. The media will not voluntarily limit the flow of information. Therefore, terrorist demands will be met if and only if the media give full coverage to terrorist acts. (H, D, C, E)
28. Either we take recycling seriously or we will be buried in garbage. If we incinerate our garbage only if our health is jeopardized, then we do not take recycling seriously. If our landfills are becoming exhausted, then if we incinerate our garbage, then toxic ash will be produced. If toxic ash is produced, then our health is jeopardized. Our landfills are becoming exhausted. Therefore, we will be buried in garbage. (R, B, I, H, L, T)
29. If the drug interdiction program is strengthened only if cocaine becomes more readily available, then either the number of addicts is decreasing or the war on drugs is failing. If the drug interdiction program is strengthened, then smugglers will shift to more easily concealable drugs. If smugglers shift to more easily concealable drugs, then cocaine will become more readily available. Furthermore, the number of addicts is not decreasing. Therefore, the war on drugs is failing. (S, R, N, W, M)
30. If the death penalty is not cruel and unusual punishment, then either it is cruel and unusual punishment or if society is justified by using it, then it will deter other criminals. If the death penalty is cruel and unusual punishment, then it is both cruel and unusual and its use degrades society as a whole. It is not the case that both the death penalty is cruel and unusual and its use degrades society as a whole. Furthermore, the death penalty will not deter other criminals. Therefore, society is not justified in using the death penalty. (D, P, S, C, W)
31. If topaz is harder than quartz, then it will scratch quartz and also feldspar. Topaz is harder than quartz and it is also harder than calcite. Therefore, either topaz will scratch quartz or it will scratch corundum. (T, Q, F, C, O)
32. If clearcutting continues in primary forests and the Endangered Species Act is not repealed, then either the Endangered Species Act will be repealed or thousands of animal species will become extinct. Clearcutting continues in primary forests. The Endangered Species Act will not be repealed. Therefore, thousands of animal species will become extinct. (C, E, T)

33. If the rate at which rubidium becomes strontium or the rate at which potassium becomes argon are accurate indicators of age, then rocks from Greenland are 3.8 billion years old or rocks from the moon are 4.6 billion years old. The rate at which rubidium becomes strontium and the rate at which uranium becomes lead are accurate indicators of age. If rocks from Greenland are 3.8 billion years old, then the earth was formed more than 3.8 billion years ago; also, if rocks from the moon are 4.6 billion years old, then the earth was formed 4.6 billion years ago. If either the earth was formed more than 3.8 billion years ago or 4.6 billion years ago, then the Creationists are wrong. Therefore, the Creationists are wrong. (R, P, G, M, U, E, F, C)
34. Either animals are mere mechanisms or they feel pain. If either animals feel pain or they have souls, then they have a right not to be subjected to needless pain and humans have a duty not to inflict needless pain on them. It is not the case that animals are mere mechanisms. Therefore, animals have a right not to be subjected to needless pain. (M, P, S, R, D)
35. If half the nation suffers from depression, then if either the insurance companies have their way or the psychiatrists have their way, then everyone will be taking antidepressant drugs. If either half the nation suffers from depression or sufferers want a real cure, then it is not the case that everyone will be taking antidepressant drugs. Half the nation suffers from depression. Therefore, it is not the case that either the insurance companies or the psychiatrists will have their way. (H, I, P, E, W)
36. If either parents get involved in their children's education or the school year is lengthened, then if the children learn phonics, their reading will improve and if they are introduced to abstract concepts earlier, their math will improve. If either parents get involved in their children's education or nebulous subjects are dropped from the curriculum, then either the children will learn phonics or they will be introduced to abstract concepts earlier. Parents will get involved in their children's education, and writing lessons will be integrated with other subjects. Therefore, either the children's reading or their math will improve. (P, S, L, R, I, M, N, W)
37. If either manufacturers will not concentrate on producing a superior product or they will not market their product abroad, then if they will not concentrate on producing a superior product, then the trade deficit will worsen. Either manufacturers will concentrate on producing a superior product or the trade deficit will not worsen. Manufacturers will not concentrate on producing a superior product. Therefore, today's business managers lack imagination. (C, M, T, B)
38. If either medical fees or malpractice awards escape restrictions, then health care costs will soar and millions of poor will go uninsured. If the lawyers get their way, then malpractice awards will escape restrictions. If the doctors get their way, then medical fees will escape restrictions. Either the doctors or the lawyers will get their way, and insurance companies will resist reform. Therefore, health care costs will soar. (F, A, H, P, L, D, I)
39. If we are less than certain the human fetus is a person, then we must give it the benefit of the doubt. If we are certain the human fetus is a person, then we must accord it the right to live. If either we must give the fetus the benefit of the doubt or accord it the right to live, then we are not less than certain the fetus is human and it is not merely a part of the mother's body. Either we are less than certain the human fetus is a person or we are certain about it. If we are certain the human fetus is a person, then abortion is immoral. Therefore, abortion is immoral. (L, G, C, A, M, I)

40. If the assassination of terrorist leaders violates civilized values and also is not effective in the long run, then if it prevents terrorist atrocities, then it is effective in the long run. If the assassination of terrorist leaders violates civilized values, then it is not effective in the long run. The assassination of terrorist leaders violates civilized values and is also illegal. If the assassination of terrorist leaders is not effective in the long run, then either it prevents terrorist atrocities or it justifies acts of revenge by terrorists. Therefore, the assassination of terrorist leaders justifies acts of revenge by terrorists and also is not effective in the long run. (V, E, P, I, J)
41. Either health care costs are skyrocketing and they are attributable to greedy doctors, or health care costs are skyrocketing and they are attributable to greedy hospitals. If health care costs are skyrocketing, then both the government should intercede and health care may have to be rationed. Therefore, health care costs are skyrocketing and health care may have to be rationed. (S, D, H, I, R)
42. Either the ancient Etruscans were experienced city planners and they invented the art of writing or they were highly skilled engineers and they invented the art of writing. If the ancient Etruscans were bloodthirsty numbskulls (as scholars once thought), they did not invent the art of writing. Therefore, the ancient Etruscans were not bloodthirsty numbskulls (as scholars once thought). (C, I, H, B)
43. It is not the case that either the earth's molten core is stationary or that it contains no iron. If it is not the case that both the earth's molten core is stationary and has a regular topography, then either the earth's core contains no iron or the direction of the earth's magnetic field is subject to change. Therefore, the direction of the earth's magnetic field is subject to change. (S, C, R, D)
44. Either mosquito genes can be cloned or mosquitoes will become resistant to all insecticides and the incidence of encephalitis will increase. If either mosquito genes can be cloned or the incidence of encephalitis increases, then mosquitoes will not become resistant to all insecticides. Therefore, either mosquito genes can be cloned or mosquitoes will multiply out of control. (G, R, E, M)
45. Protein engineering will prove to be as successful as genetic engineering, and new enzymes will be developed for producing food and breaking down industrial wastes. If protein engineering proves to be as successful as genetic engineering and new enzymes are developed for breaking down industrial wastes, then it is not the case that new enzymes will be developed for producing food but not medicines. Therefore, protein engineering will prove to be as successful as genetic engineering and new enzymes will be developed for producing medicines. (E, P, B, M)
46. If workers have a fundamental right to a job, then unemployment will be virtually nonexistent but job redundancy will become a problem. If workers have no fundamental right to a job, then production efficiency will be maximized but job security will be jeopardized. Workers either have or do not have a fundamental right to a job. Therefore, either unemployment will be virtually nonexistent or production efficiency will be maximized. (F, U, R, P, S)
47. If Japan is to reduce its huge trade surplus, then it must either convince its citizens to spend more or it must move its manufacturing facilities to other countries. It is not the case that Japan will either increase its imports or convince its citizens to spend more. Furthermore, it is not the case that Japan will either allow foreign construction companies to compete on an equal footing or move its manufacturing facilities to other countries. Therefore, Japan will not reduce its huge trade surplus. (R, C, M, I, A)
48. If women are by nature either passive or uncompetitive, then it is not the case that there are lawyers who are women. If men are by nature either insensitive or without the ability to nurture, then it is not the case that there are kindergarten teachers who are men. There are lawyers who are women and kindergarten teachers who are men. Therefore, it is not the case that either women by nature are uncompetitive or men by nature are without the ability to nurture. (P, U, L, I, W, K)

49. It is not the case that either the sun's interior rotates faster than its surface or Einstein's general theory of relativity is wrong. If the sun's interior does not rotate faster than its surface and eccentricities in the orbit of Mercury can be explained by solar gravitation, then Einstein's general theory of relativity is wrong. Therefore, eccentricities in the orbit of Mercury cannot be explained by solar gravitation. (S, E, M)
50. Either school dropout programs are not as effective as they could be, or they provide basic thinking skills and psychological counseling to their students. Either school dropout programs are not as effective as they could be, or they adequately prepare their students for getting a job and working effectively with others. Either school dropout programs do not provide psychological counseling to their students or they do not provide adequate preparation for working effectively with others. Therefore, school dropout programs are not as effective as they could be. (E, B, P, G, W)
51. If high-tech products are exported to Russia, then domestic industries will benefit. If the Russians can effectively utilize high-tech products, then their standard of living will improve. Therefore, if high-tech products are exported to Russia and the Russians can effectively utilize them, then their standard of living will improve and domestic industries will benefit. (H, D, U, S)
52. If the police take you into custody, then if they inform you that you have the right to remain silent, then whatever you say will be used against you. If the police inform you that you have the right to remain silent, then if whatever you say will be used against you, then you should not say anything. Therefore, if the police take you into custody, then if they inform you that you have the right to remain silent, then you should not say anything. (P, I, W, S)
53. A doctor must disconnect a dying patient from a respirator if and only if the fact that patients are self-determining implies that the doctor must follow the patient's orders. If a dying patient refuses treatment, then the doctor must disconnect the patient from a respirator and the patient will die peacefully. Patients are self-determining. Therefore, if a dying patient refuses treatment, then the doctor must follow the patient's orders. (D, S, F, R, P)
54. If jails are overcrowded, then dangerous suspects will be released on their own recognizance. If jails are overcrowded and dangerous suspects are released on their own recognizance, then crime will increase. If no new jails are built and crime increases, then innocent victims will pay the price of crime. Therefore, if jails are overcrowded, then if no new jails are built, then innocent victims will pay the price of crime. (J, D, C, N, I)