

Deductive argument samples (to illustrate validity and soundness)

A way to tell if an argument is valid or invalid:

- (i) *Suppose* that all of the premises of the argument are true.
- (ii) *Given that supposition*, ask “Must the conclusion of the argument be true?”
- (iii) If the answer is ‘yes’, then the argument is valid.
If the answer is ‘no’, then the argument is invalid.

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| Example 1 | (1) Cigarettes contain tobacco. (2) Tobacco is a natural product. <hr style="width: 20%; margin-left: 0;"/> (3) Cigarettes contain a natural product. |
| Example 2 | (1) Cigarettes contain only tobacco. (2) Tobacco is a natural product. <hr style="width: 20%; margin-left: 0;"/> (3) Cigarettes contain only natural products. |
| Example 3 | (1) Everyone from North Carolina smokes. (2) Dennis smokes. <hr style="width: 20%; margin-left: 0;"/> (3) Dennis is from North Carolina. |
| Example 4 | (1) Everyone from North Carolina smokes. (2) Dennis is from North Carolina. <hr style="width: 20%; margin-left: 0;"/> (3) Dennis smokes. |
| Example 5 | (1) Cigarette smoke is carcinogenic or cigarette smoke smells like roses. (2) Cigarette smoke isn't carcinogenic. <hr style="width: 20%; margin-left: 0;"/> (3) Cigarette smoke smells like roses. |
| Example 6 | (1) Cigarette smoke is carcinogenic or cigarette smoke smells like roses. (2) Cigarette smoke is carcinogenic. <hr style="width: 20%; margin-left: 0;"/> (3) Cigarette smoke doesn't smell like roses. |
| Example 7 | (1) The Philip Morris company manufactures cigarettes. (2) Camel Lights is a type of cigarette. <hr style="width: 20%; margin-left: 0;"/> (3) The Philip Morris company manufactures Camel Lights. |
| Example 8 | (1) The Philip Morris company manufactures Camel Lights. (2) Camel Lights is a type of cigarette. <hr style="width: 20%; margin-left: 0;"/> (3) The Philip Morris company manufactures cigarettes. |

Some true/false questions on validity and soundness

1. Every valid argument has premises that are all true.
2. Every valid argument has a true conclusion.
3. Some valid arguments have premises that are all true.
4. Some valid arguments with true premises have a false conclusion.
5. No invalid arguments have true conclusions.
6. No valid arguments have a false conclusion.

7. An invalid argument can have true premises and a true conclusion.
8. A sound argument can have a false premise.
9. A sound argument can be invalid.
10. A valid argument can be unsound.
11. An unsound argument can be valid.
12. No sound arguments can be invalid.
13. All sound arguments must be valid.
14. All valid arguments must be sound.

15. It is impossible to have a valid argument with true premises and a false conclusion.
16. It is impossible to have a sound argument with true premises and a false conclusion.
17. It is possible to have a valid argument with false premises and a false conclusion.
18. It is impossible to have a valid argument with true premises and a true conclusion.

19. An argument with true premises and a true conclusion must be sound.
20. An argument with true premises and a false conclusion must be invalid.