

BLM 3.2

FORMAL LOGIC: VALID VS. INVALID ARGUMENTS

For each of the arguments below, determine if the argument is valid or invalid—that is, determine if the conclusion necessarily, and logically, follows from the premises (valid) or if it is logically possible for the premises to be true and the conclusion false (invalid). It may help to substitute actual propositions (that can reasonably be taken as true) in place of the letters. An example is done for you, although it is trivial.

Example: $\frac{p}{q}$ $\therefore p \wedge q$ <hr style="width: 50%; margin-left: 0;"/> Valid	Possible Substitution: It is Wednesday. The sun is shining.	$\frac{\text{It is Wednesday.}}{\text{The sun is shining.}}$ $\text{It is Wednesday and the sun is shining.}$	
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This is valid since *given* that each of the premises are true, then, as the conclusion states, they are both true; it is logically impossible for the conclusion to be false given the premises are true. Thus, the word *valid* should be written in the space underneath.

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| 1. $\frac{p \supset q}{p}$ $\therefore q$ <hr style="width: 50%; margin-left: 0;"/> | 2. $\frac{p \supset q}{\sim q}$ $\therefore \sim p$ <hr style="width: 50%; margin-left: 0;"/> | 3. $\frac{p \supset q}{q \supset r}$ $\therefore p \supset r$ <hr style="width: 50%; margin-left: 0;"/> | 4. $\frac{p \supset q}{q}$ $\therefore p$ <hr style="width: 50%; margin-left: 0;"/> |
| 5. $\frac{\sim p \wedge \sim q}{\therefore \sim (p \vee q)}$ <hr style="width: 50%; margin-left: 0;"/> | 6. $\frac{p \vee q}{\sim p}$ $\therefore q$ <hr style="width: 50%; margin-left: 0;"/> | 7. $\frac{p}{\therefore p \vee q}$ <hr style="width: 50%; margin-left: 0;"/> | 8. $\frac{p \supset q}{\sim p}$ $\therefore \sim q$ <hr style="width: 50%; margin-left: 0;"/> |
| 9. $\frac{(p \supset q) \wedge (r \supset s)}{p \vee r}$ $\therefore q \vee s$ <hr style="width: 50%; margin-left: 0;"/> | 10. $\frac{p \vee (q \wedge r)}{\therefore (p \vee q) \wedge (p \vee r)}$ <hr style="width: 50%; margin-left: 0;"/> | 11. $\frac{p \supset q}{\therefore p \supset (p \wedge q)}$ <hr style="width: 50%; margin-left: 0;"/> | 12. $\frac{p \supset q}{\therefore p \vee \sim q}$ <hr style="width: 50%; margin-left: 0;"/> |
| 13. $\frac{p \supset q}{\therefore \sim p \vee q}$ <hr style="width: 50%; margin-left: 0;"/> | 14. $\frac{p \wedge q}{\therefore p}$ <hr style="width: 50%; margin-left: 0;"/> | 15. $\frac{\sim p \vee \sim q}{\therefore \sim (p \wedge q)}$ <hr style="width: 50%; margin-left: 0;"/> | 16. $\frac{(p \wedge q) \vee (p \wedge r)}{\therefore p \vee (q \vee r)}$ <hr style="width: 50%; margin-left: 0;"/> |

