

TFL Symbolization Exercise (And, Or, Not)

PHI 154 (Eliot) Fall 2022

Use the following symbolization key to symbolize each of the numbered sentences in truth-functional logic (TFL).

A = Ali runs.

B = Bap runs.

C = Cal runs.

1. Cal doesn't run.
2. Ali and Bap run.
3. Bap runs and so does Ali.
4. Bap doesn't run, but Ali does.
5. Although Cal runs, Ali doesn't.
6. Cal runs or Bap does.
7. Cal either runs or doesn't.
8. Neither Ali nor Bap runs.
9. Though Ali doesn't run, Bap and Cal do.
10. Either Ali or Bap runs, but Cal doesn't.
11. It's not the case that Cal or Ali run.
12. Ali, Cal, and Bap all run.
13. Neither Ali nor Bap nor Cal run.
14. Either Bap or Cal doesn't run.
15. Ali runs; however, either Bap or Cal does not.
16. At least one of Ali, Bap, and Cal runs.
17. Neither Ali and Bap nor Ali and Cal run.

Using the symbolization key above, write English interpretations of each of the following TFL sentences.

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| 1. $\neg B$ | 6. $\neg(A \wedge B)$ |
| 2. $(A \wedge C)$ | 7. $\neg(A \vee C)$ |
| 3. $(B \wedge \neg C)$ | 8. $(B \wedge (A \vee C))$ |
| 4. $(A \wedge (B \wedge C))$ | 9. $(\neg A \wedge \neg B)$ |
| 5. $(C \vee A)$ | 10. $(\neg C \vee \neg A)$ |