

Instructions: Translate all of the following into Propositional Logic. The solutions are below. They are not the only solutions, but they are the most intuitive ones. You are not finished with this worksheet until you can translate every sentence from beginning to end without making an error.

T= It is tall.

F= It is fat.

H = It is heavy

R = It is round

1. If it is tall, then it is not fat.
2. It is tall if and only if it is not fat.
3. It is tall or fat or heavy.
4. It is heavy or, it is fat if and only if it is round.
5. If it is fat and round, then it is not tall.
6. If it is not both round and tall, then it is fat.
7. It is tall, but also both fat and not round.
8. If it is the case that if it is round then it is heavy, then it is fat.
9. It is fat if and only if it is round, or it is not fat or it is not round.
10. It is fat unless it is heavy.
11. It is round only if it is heavy and tall.
12. If it is round then it is tall, or if it is round then it is not tall.
13. If it is not tall and it is not fat, then it is not both tall and fat.

Solutions:

1. $(T \rightarrow \sim F)$

2. $(T \leftrightarrow \sim F)$

3. $((T \vee F) \vee H)$

4. $(H \vee (F \leftrightarrow R))$

5. $((F \& R) \rightarrow \sim T)$

6. $(\sim(R \& T) \rightarrow F)$

7. $(T \& (F \& \sim R))$

8. $((R \rightarrow H) \rightarrow F)$

9. $((F \leftrightarrow R) \vee (\sim F \vee \sim R))$

10. $(\sim F \rightarrow H)$

11. $(R \rightarrow (H \& T))$

12. $((R \rightarrow T) \vee (R \rightarrow \sim T))$

13. $((\sim T \& \sim F) \rightarrow \sim(T \& F))$