

Example Sentences

1. Consider the following axioms:

1. Every child loves Santa.
 $\forall x (CHILD(x) \rightarrow LOVES(x, Santa))$
2. Everyone who loves Santa loves any reindeer.
 $\forall x (LOVES(x, Santa) \rightarrow \forall y (REINDEER(y) \rightarrow LOVES(x, y)))$
3. Rudolph is a reindeer, and Rudolph has a red nose.
 $REINDEER(Rudolph) \wedge REDNOSE(Rudolph)$
4. Anything which has a red nose is weird or is a clown.
 $\forall x (REDNOSE(x) \rightarrow WEIRD(x) \vee CLOWN(x))$
5. No reindeer is a clown.
 $\neg \exists x (REINDEER(x) \wedge CLOWN(x))$
6. Scrooge does not love anything which is weird.
 $\forall x (WEIRD(x) \rightarrow \neg LOVES(Scrooge, x))$
7. (Conclusion) Scrooge is not a child.
 $\neg CHILD(Scrooge)$

2. Consider the following axioms:

1. Anyone who buys carrots by the bushel owns either a rabbit or a grocery store.
 $\forall x (BUY(x) \rightarrow \exists y (OWNS(x, y) \wedge (RABBIT(y) \vee GROCERY(y))))$
2. Every dog chases some rabbit.
 $\forall x (DOG(x) \rightarrow \exists y (RABBIT(y) \wedge CHASE(x, y)))$
3. Mary buys carrots by the bushel.
 $BUY(Mary)$
4. Anyone who owns a rabbit hates anything that chases any rabbit.
 $\forall x \forall y (OWNS(x, y) \wedge RABBIT(y) \rightarrow \forall z \forall w (RABBIT(w) \wedge CHASE(z, w) \rightarrow HATES(x, z)))$
5. John owns a dog.
 $\exists x (DOG(x) \wedge OWNS(John, x))$
6. Someone who hates something owned by another person will not date that person.
 $\forall x \forall y \forall z (OWNS(y, z) \wedge HATES(x, z) \rightarrow \neg DATE(x, y))$
7. (Conclusion) If Mary does not own a grocery store, she will not date John.
 $((\neg \exists x (GROCERY(x) \wedge OWN(Mary, x))) \rightarrow \neg DATE(Mary, John))$

