

1A Logic: Worksheet 6	5	<i>Excellent</i>	
	4	<i>Good</i>	
Your name:	3	<i>Satisfactory</i>	
Logic class (A/B/C/D/E):	2	<i>Weak</i>	
Logic class tutor:	1	<i>Very poor</i>	

Reading

An Introduction to Formal Logic, chapters 26–29, 32–33.

1 Self-marked exercises

Do the following questions from the end-of-chapter exercises in *An Introduction to Formal Logic*. Then, when you have completed them, carefully check your answers against the answers available on the book's website at <http://www.logicbook.net>.

Exercises 26: last five questions.

Exercises 27: questions for the q -valuation whose domain includes Romeo.

Exercises 29: questions B3–6.

Exercises 33: odd numbers of A.

Correct your own work *in red*, for the marker to review. In the box below, note any residual queries or problems you have with these self-marked exercises (use a continuation sheet if you have more queries than you can mention here).

Queries

2 Further exercises

A. Use **QL** trees to show the following (these are called *prenexing rules*):

1. $\forall x(Fx \supset Ga)$ is logically equivalent to $(\exists xFx \supset Ga)$.
2. $\exists x(Fx \supset Ga)$ is logically equivalent to $(\forall xFx \supset Ga)$.
3. $\forall x(Ga \supset Fx)$ is logically equivalent to $(Ga \supset \forall xFx)$.
4. $\exists x(Ga \supset Fx)$ is logically equivalent to $(Ga \supset \exists xFx)$.

B. Consider this argument: $(\forall xFx \equiv \forall xGx) \therefore \forall x(Fx \equiv Gx)$. Is it q-valid? If so, show it is so using a tree. If not, give a q-valuation which shows that it is invalid.

C. Consider the sentence “The Holy Roman Emperor is holy”.

1. Translate it into **QL**⁼ as best you can.
2. Give three (consistent!) **QL**⁼ sentences which are inconsistent with the **QL**⁼ sentence you wrote down in answer to the previous question. Give natural English translations for each of these three sentences.