

1A Logic: Worksheet 7	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 30–1, 34–35.

## 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 34: even-numbered questions.

Exercises 35: questions A2, A4, A6, A9, and questions C1–5.

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. Translate the following into  $\mathbf{QL}^=$ , using this translation scheme:

‘M’  $\Rightarrow$  the set of mice.

‘B’  $\Rightarrow$  the set of boxes.

‘C’  $\Rightarrow$  the set of cute things.

‘I’  $\Rightarrow$  the set of pairs  $\langle x, y \rangle$  such that  $x$  is inside  $y$ .

1. The mouse is in the box and is cute.

2. The mouse in the box is cute.

Comment on the differences between the two sentences.

How do your translations reflect this difference?

B. Translate the following argument into  $\mathbf{QL}^=$ :

- All witches ride broomsticks.

$\therefore$  Any witch’s cat is a cat belonging to someone who rides a broomstick.

Use a tree to show that it is valid.

*Hint: translate “ $x$  is a cat belonging to  $y$ ” with a single two-place predicate: “ $Cxy$ ”.*

C. Let the extension of ‘F’ be the set of figs. Translate the following argument into  $\mathbf{QL}^=$ :

- There are exactly two figs.

- Exactly one thing is not a fig.

$\therefore$  There are exactly three things.

Use a tree to show that this argument is valid.

*Note: this tree will be quite large!*