Philosophy 240: Symbolic Logic
Fall 2009

Hamilton College
Russell Marcus
rmarcus1@hamilton.edu

Identity Theory Jigsaw Lesson
Work Group: At Least

I. Translation key:

j: Jim; o: the Office
Ax: x is an accountant; Dx: x is a drug test; Ex: x is an employee; Hx: x is happy; Ix: x is in the office
Bxy: x is bigger than y; Ixy: x is in y; Pxy: x passed y; Txy: x tolerates y

II. Examine the translations below, which use the key in I.

1. There is at least one accountant in the office.

$(\exists x)(Ax \bullet Ixo)$

2. There are at least two accountants in the office.

$(\exists x)(\exists y)(Ax \bullet Ixo \bullet Ay \bullet Iyo \bullet x \neq y)$

3. There are at least three accountants in the office.

$(\exists x)(\exists y)(\exists z)(Ax \bullet Ixo \bullet Ay \bullet Iyo \bullet Az \bullet Izo \bullet x \neq y \bullet x \neq z \bullet y \neq z)$

4. There are at least two happy employees who tolerate each other.

$(\exists x)(\exists y)(Hx \bullet Ex \bullet Hy \bullet Ey \bullet x \neq y \bullet Txy \bullet Tyx)$

5. At least three accountants passed a drug test.

$(\exists x)(\exists y)(\exists z)[Ax \bullet Ay \bullet Az \bullet x \neq y \bullet x \neq z \neq y \neq z \bullet (\exists w)(Dw \bullet Pxw) \bullet (\exists w)(Dw \bullet Pyw) \bullet (\exists w)(Dw \bullet Pzw)]$

III. Try these, using the key in I.

6. There are at least two employees bigger than Jim.

7. There are at least three employees bigger than Jim.

8. There are at least four accountants in the office.