

Assignment #1 due today by 5pm.

Assignment #2 due Friday 9/9 by 5pm.

Assignment #3 due Friday 9/16 by 5pm.

$B(x) = \text{"x is a bee"}$

$Y(x) = \text{"x is yellow"}$

$F(x) = \text{"x is a flower"}$

$L(x,y) = \text{"x likes y"}$

"All bees are yellow."

$$(\forall x)(B(x) \rightarrow Y(x))$$

"Only bees are yellow."

$$(\forall x)(Y(x) \rightarrow B(x))$$

equivalently

$$(\forall x)(B'(x) \rightarrow Y'(x))$$

"No bees are yellow."

Same as saying

"All bees are not yellow."

$$(\forall x)(B(x) \rightarrow \neg Y(x))$$

"Every bee likes some kinds of flowers"

$$(\forall x)(B(x) \rightarrow (\exists y)(F(y) \wedge L(x,y)))$$

or

$$(\forall x)(\exists y)(B(x) \rightarrow F(y) \wedge L(x,y))$$

"Some bees like all flowers."

$$(\exists x)(B(x) \wedge (\forall y)(F(y) \rightarrow L(x,y)))$$

or

$$(\exists x)(\forall y)(B(x) \wedge (F(y) \rightarrow L(x,y)))$$

"All bees like all flowers."

$$(\forall x)(B(x) \rightarrow (\forall y)(F(y) \rightarrow L(x,y)))$$

OR

$$(\forall x)(\forall y)(B(x) \rightarrow (F(y) \rightarrow L(x,y)))$$

OR

$$(\forall x)(\forall y)(B(x) \wedge F(y) \rightarrow L(x,y))$$

$$\exists x \neg (F(x) \rightarrow L(x, y))$$

"all flowers."

$$F(x) \rightarrow L(x, y)$$

$$\neg L(x, y)$$

$$\rightarrow L(x, y)$$

"No bees like flowers."

equivalent to

"Every bee doesn't like flowers."

$$(\forall x)(B(x) \rightarrow (\forall y)(F(y) \rightarrow L(x, y)))$$

OR

$$(\forall x)(\forall y)(B(x) \wedge F(y) \rightarrow L(x, y))$$