

Basic Properties of Equality:

reflexive  $x = x$ .

symmetric If  $x = y$ , then  $y = x$ .

transitive If  $x = y$  and  $y = z$ , then  $x = z$ .

- For any function  $f(x_1, \dots, x_n)$ ,  
if  $x_1 = y_1, \dots, x_n = y_n$  then

$$f(x_1, \dots, x_n) = f(y_1, \dots, y_n).$$

- Similarly if a predicate (relation) is true of  $x_1, \dots, x_n$  and  
 $x_1 = y_1, \dots, x_n = y_n$  then the predicate is true of  $y_1, \dots, y_n$