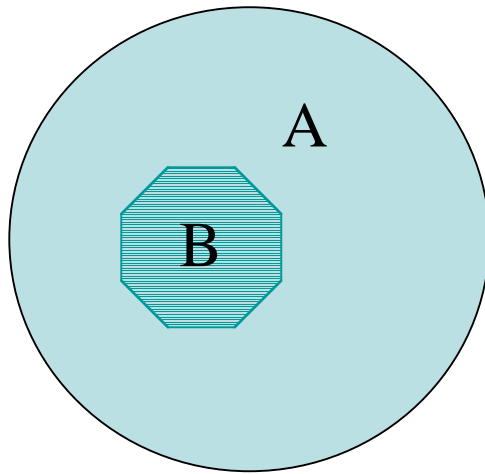
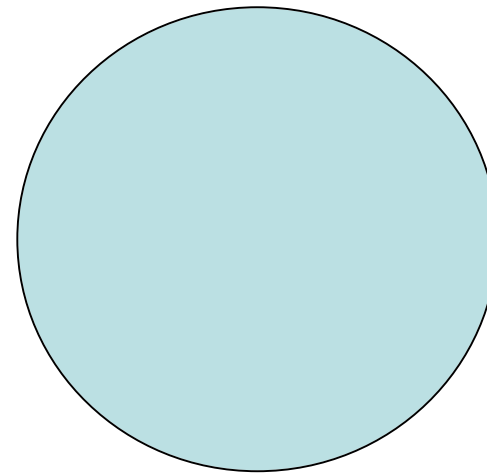


Relations between sets



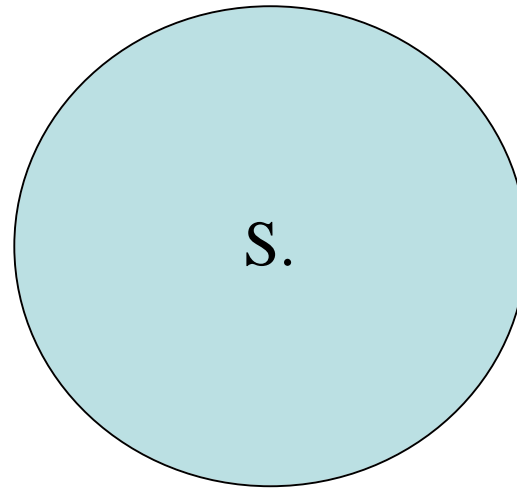
B-all Canadians
A-all Americans
B is a subset of A
 $B \subset A$



$A=B$

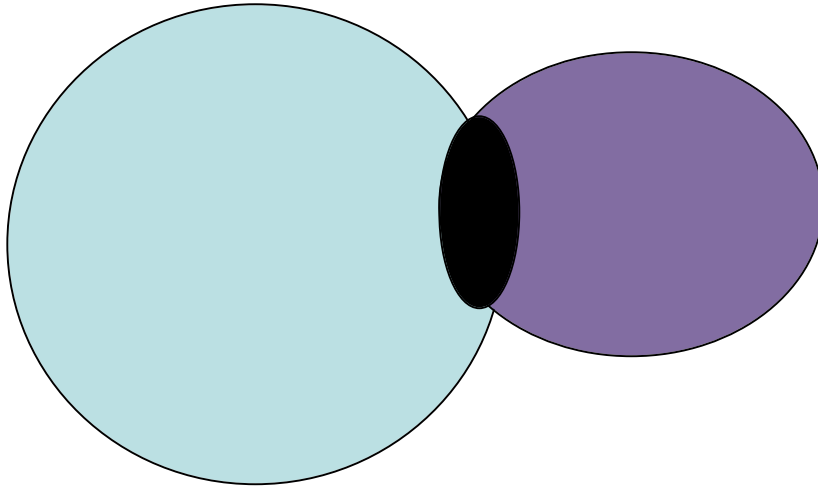
Member of set

- A - set of all students taking LIN 3111
- $S \in A$ (S. is a member)
- Not a subset!



Intersection set

- $A \cap B$



A—all students registered at the University of Ottawa

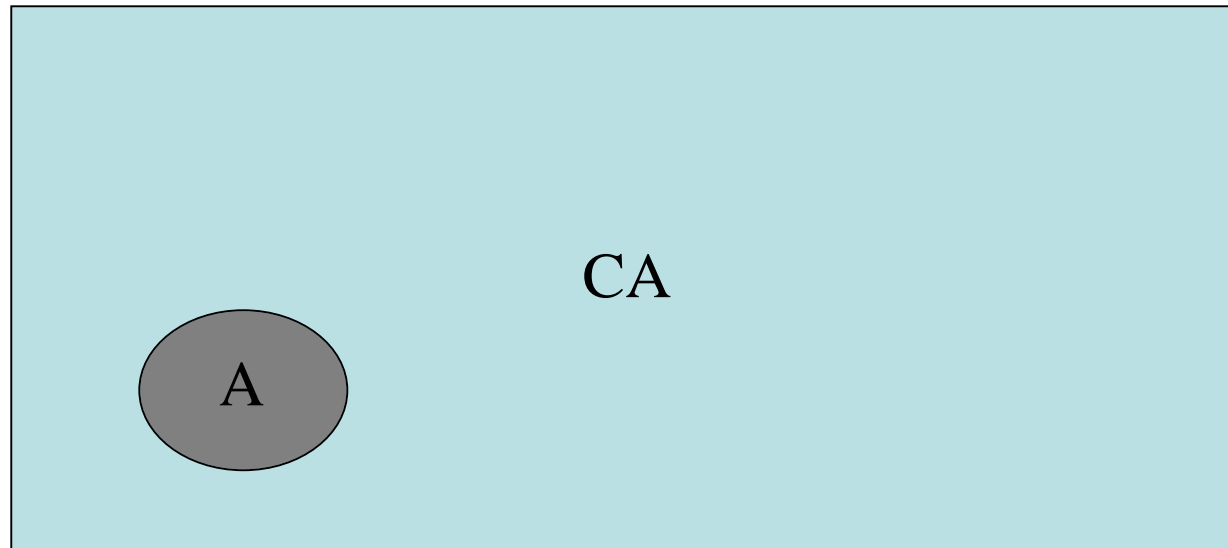
B—all people who have read today “The Citizen”

Compare: $A \cup B$ (union of A and B)

Compare $A - B$ (difference: all student who have not read The Citizen)

Universe of discourse

- U



- CA-set of all members of U (=Universe of discourse) which are not members of A

Ordered pairs

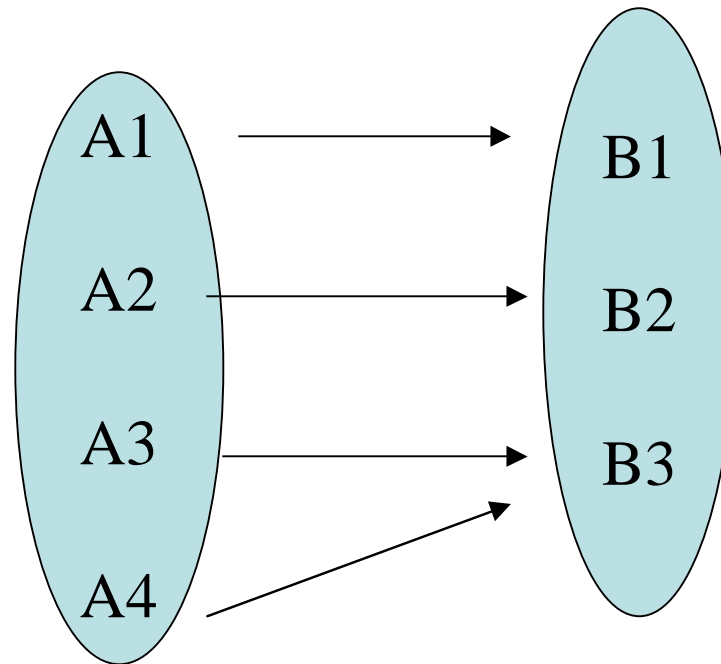
- Ordered pairs:
- $\langle a, b \rangle$
- (a, b)
- Unordered pairs:
- $\{a, b\} = \{b, a\}$

Function

- To each element in the first set, we assign an element in the second set

A-argument (set of all arguments: domain)

B-value (set of all possible values: co-domain, range)



Function:

$f(x)$

For example:

$f(A1)=B1$

The function takes the value B1 for the argument A1

Domain and co-domain

- Function: The wife of

Domain: All married women

Co-domain: All married men

- Anna is the wife of Fred. $\text{Wife}(a,f)$

- Function: The capital of

Domain: cities

Co-domain: countries

- Ottawa is the capital of Canada. $\text{Capital}(o,c)$

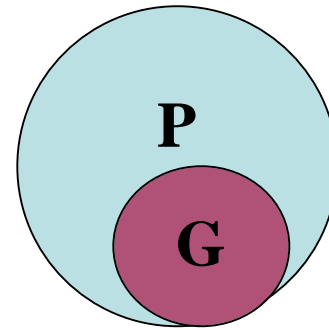
Quantifiers

- Every girl is pretty

1) $(\forall x: G(x))P_x$

2)

$\forall x (G(x) \rightarrow P(x))$

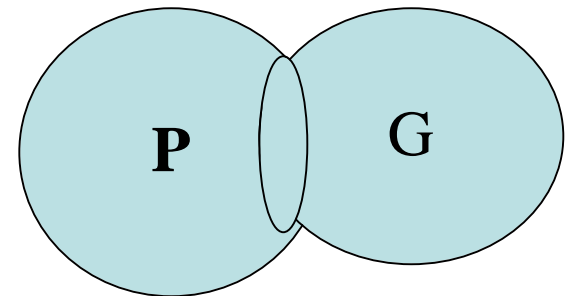


But there are other pretty things

- Some girl is pretty

1) $(\exists x: G(x)) P_x$

2) $\exists x (G(x) \& P(x))$



Scope ambiguities

- Everyone loves someone.
- 1. Someone is loved by everyone.(narrow scope)
 $(\exists y: P_y) (\forall x: P_x)L_{xy}$
- 2. Everyone loves a different individual.(wide scope)
 $(\forall x: P_x) (\exists y: P_y)L_{xy}$

Reminder:

Squib is due April 15, 2002
by 5 p.m.

- Length: 4,5 pages (maximum 8)
- No hand-written squibs will be accepted.
(please let me know, if for some reason, you cannot comply with this requirement)
- Please, let me know if you need to change or modify your topic (you can also send me an e-mail)